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(54) DOMESTIC APPLIANCE, SERVER SYSTEM FOR DOMESTIC APPLIANCE, AND REPEATING DEVICE

(57)Abstract:
PROBLEM TO BE SOLVED: To readily achieve remote control of domestic appliances of which the set-up environments are varied.
SOLUTION: When a user demands services by operating a Web browser 124 of a TV device 12, the demand for services including an ID of a domestic appliance (air conditioner 22) from which the services are to be taken is supplied to a domestic appliance server system 40 through a router 19 and a network 30. In response to the demand, an HTTPd 42a of the server system 40 supplies a control program for taking the demanded services to the domestic appliance (air conditioner 22) corresponding to the domestic appliance ID.
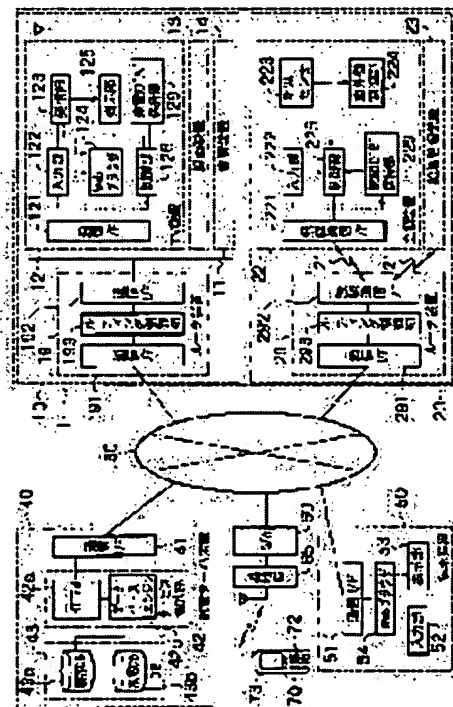
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CLAIMS

[Claim(s)]
[Claim 1] It is the household-electric-appliances device which applies for use of service to the household-electric-appliances server equipment which offers service through a public network. An identification information maintenance means to hold the identification information of the proper beforehand assigned so that there might be no duplication between the household-electric-appliances devices which belong to two or more categories and can perform said household-electric-appliances server equipment and communication link, The means of communications which performs a communication link with said household-electric-appliances server equipment through an in-house network or a public network, The identification information of the same owner's household-electric-appliances device It holds for every owner. Offer of service to every owner The household-electric-appliances device characterized by having a service request means to transmit the offer demand of service to the household-electric-appliances device (2nd household-electric-appliances device) of the identification information of the household-electric-appliances device (1st household-electric-appliances device) concerned, and the owner of the household-electric-appliances device concerned to the household-electric-appliances server equipment to manage.
[Claim 2] An acknowledgment indicator means to display the image according to the data about said 2nd household-electric-appliances device by which said service request means is supplied from said household-electric-appliances server equipment to the identification information of said 1st household-electric-appliances device, or the offer demand of service, When there is a check input from the user according to the display by this acknowledgment indicator means, starting of the service use software beforehand built into said 2nd household-electric-appliances device by service use software or the household-electric-appliances device concerned in the confirmed information which shows a purport with a check input according to the confirmed information concerned The household-electric-appliances device according to claim 1 characterized by having a check transmitting means to transmit to said server equipment which transmits the command to direct.
[Claim 3] Said service request means receives the user supplied from said household-electric-appliances server equipment according to the identification information of said 1st household-electric-appliances device, or the offer demand of said service. The directions display means on which the image according to the power-source input about the 2nd household-electric-appliances device or directions of network connection is displayed, When there is a completion input from the user according to the display by this directions display means, a completion transmitting means to transmit to said server equipment which starts offer of service of as opposed to said 2nd household-electric-appliances device for the completion information which shows a purport with a completion input according to the completion information concerned The household-electric-appliances device according to claim 1 characterized by having.
[Claim 4] It is a household-electric-appliances device using the service offered from the household-electric-appliances server equipment which offers service through a public network. An identification information maintenance means to hold the identification information of the proper beforehand assigned so that there might be no duplication between the household-electric-appliances devices which belong to two or more categories and can perform said household-electric-appliances server equipment and communication link, The means of communications which performs a communication link with said household-electric-appliances server equipment through an in-house network or a public network, The identification information of the same owner's household-

electric-appliances device It holds for every owner. Offer of service to every owner The household-electric-appliances server equipment to manage a service request Starting of the service use software beforehand built into the service use software transmitted according to the offer demand of service to the identification information of this household-electric-appliances device that the household-electric-appliances device (1st household-electric-appliances device) to transmit transmitted, and the household-electric-appliances device (2nd household-electric-appliances device) concerned, or the household-electric-appliances device concerned A receiving means to receive the command to direct through said means of communications, The household-electric-appliances device characterized by having a service use means to perform the service use software concerned according to said received service use software or command, and to receive offer of the service from said household-electric-appliances server.

[Claim 5] Said 1st household-electric-appliances device and said 2nd household-electric-appliances device are a household-electric-appliances device according to claim 1 or 4 characterized by connecting with a respectively different in-house network.

[Claim 6] The in-house network to which said 1st household-electric-appliances device is connected, and the in-house network to which said 2nd household-electric-appliances device is connected are a household-electric-appliances device according to claim 5 characterized by connecting with said public network through different router equipment which performs junction with said public network respectively.

[Claim 7] To said 1st household-electric-appliances device and the 2nd household-electric-appliances device The address (global address) of a proper is assigned for every device connected to said public network. It is the household-electric-appliances device according to claim 1 or 4 by which the packet from said household-electric-appliances server equipment is characterized by direct attainment being directly possible to the 2nd household-electric-appliances device, making said household-electric-appliances server equipment correspond to the identification information of said household-electric-appliances device, and holding said address or name through a public network.

[Claim 8] The effective address (local address) is assigned only within said in-house network to which the 2nd household-electric-appliances device is connected. said 2nd household-electric-appliances device -- this -- said household-electric-appliances server equipment The information which shows the purport to which it is made to correspond to the identification information of said household-electric-appliances device, and said local address is assigned is held. The communication link between said 2nd household-electric-appliances device and said household-electric-appliances server equipment said 2nd household-electric-appliances device -- this -- between said in-house network to which the 2nd household-electric-appliances device is connected, and said public network The household-electric-appliances device according to claim 1 or 4 characterized by carrying out by acting as intermediary according to the information with which transmit the junction demand which has the information which shows the address or the address of said household-electric-appliances server equipment to the established junction means, and this repeating installation indicates the address or the address under junction demand to be.

[Claim 9] The address (private address) which cannot reach from said public network side is assigned to said 2nd household-electric-appliances device. The communication link between said 2nd household-electric-appliances device and said household-electric-appliances server equipment said 2nd household-electric-appliances device -- this -- between the 2nd household-electric-appliances device and said household-electric-appliances server equipment The household-electric-appliances device according to claim 1 or 4 characterized by carrying out by acting as intermediary according to the information with which transmit the junction demand which has the information which shows the address or the address of said household-electric-appliances server equipment to the established junction means, and this repeating installation indicates the address or the address under junction demand to be.

[Claim 10] It is the household-electric-appliances device according to claim 8 or 9 characterized by performing the communication link to the 2nd household-electric-appliances device from said household-electric-appliances server equipment as a response to the transmission to said household-electric-appliances server equipment from said 2nd household-electric-appliances device for every predetermined time.

[Claim 11] The household-electric-appliances device according to claim 7 to 9 characterized by using a HTTP

(Hyper Text Transfer Protocol) protocol as a protocol of the communication link between said 2nd household-electric-appliances device and said household-electric-appliances server equipment.
[Claim 12] It is household-electric-appliances server equipment which offers the service to a household-electric-appliances device through a public network. An identification information maintenance means to hold the identification information of the proper beforehand assigned so that there might be no duplication between the household-electric-appliances devices which belong to two or more categories and can perform household-electric-appliances server equipment and a communication link concerned for every owner, The identification information concerned of the 1st household-electric-appliances device transmitted from said household-electric-appliances device (1st household-electric-appliances device) which requires use of service, A receiving means to receive the use demand of service including the information which shows the household-electric-appliances device (2nd household-electric-appliances device) using service, A check means to check whether the household-electric-appliances device corresponding to the information the owner corresponding to said said identification information of the 1st household-electric-appliances device which received indicates said 2nd household-electric-appliances device which received to be is owned with reference to said identification information maintenance means, When it is checked that the owner corresponding to the use demand of said service in this check means owns said 2nd household-electric-appliances device, starting of the service use software beforehand built into said addressing to a household-electric-appliances device of the 2nd by service use software or the household-electric-appliances device concerned Household-electric-appliances server equipment characterized by having a transmitting means to transmit the command to direct.
[Claim 13] Household-electric-appliances server equipment according to claim 12 characterized by having a device data-hold means to hold the data about said 2nd household-electric-appliances device, and an equipment-data transmitting means to transmit the data in which said 2nd household-electric-appliances device is shown according to the use demand of the service which said receiving means received to said 1st household-electric-appliances device.
[Claim 14] Household-electric-appliances server equipment according to claim 12 characterized by to have the service provision control means which starts offer of the service to said 2nd household-electric-appliances device when the completion information according to a directions transmitting means to transmit the directions to a user to said 1st household-electric-appliances device, and the directions to the user who this transmitted is received from said 1st household-electric-appliances device according to the offer demand of said service.
[Claim 15] Said 1st household-electric-appliances device and said 2nd household-electric-appliances device are household-electric-appliances server equipment according to claim 12 characterized by connecting with a respectively different in-house network.
[Claim 16] The in-house network to which said 1st household-electric-appliances device is connected, and the in-house network to which said 2nd household-electric-appliances device is connected are household-electric-appliances server equipment according to claim 15 characterized by connecting with said public network through different router equipment which performs junction with said public network respectively.
[Claim 17] To said 1st household-electric-appliances device and the 2nd household-electric-appliances device The address (global address) of a proper is assigned for every device connected to said public network. It is household-electric-appliances server equipment according to claim 12 with which the packet from the household-electric-appliances server equipment concerned is characterized by direct attainment being directly possible to the 2nd household-electric-appliances device, making said identification information maintenance means correspond to the identification information of said household-electric-appliances device, and holding said address through said public network.
[Claim 18] The effective address (local address) is assigned only within said in-house network to which the 2nd household-electric-appliances device is connected. said 2nd household-electric-appliances device -- this -- The information which shows the purport to which said identification information maintenance means is made to correspond to the identification information of said household-electric-appliances device, and said local address is assigned is held. The communication link between said 2nd household-electric-appliances device and the household-electric-appliances server equipment concerned said 2nd household-electric-appliances device -- this -- between said in-house network to which the 2nd household-electric-appliances device is connected, and said

public network Household-electric-appliances server equipment according to claim 12 characterized by carrying out by acting as intermediary according to the information with which transmit the junction demand which has the information which shows the address or the address of the household-electric-appliances server equipment concerned to the established junction means, and this repeating installation indicates the address or the address under junction demand to be.

[Claim 19] The address (private address) which cannot reach from said public network side is assigned to said 2nd household-electric-appliances device. The communication link between said 2nd household-electric-appliances device and the household-electric-appliances server equipment concerned said 2nd household-electric-appliances device -- this -- between the 2nd household-electric-appliances device and the household-electric-appliances server equipment concerned Household-electric-appliances server equipment according to claim 12 characterized by carrying out by acting as intermediary according to the information with which transmit the junction demand which has the information which shows the address or the address of said household-electric-appliances server equipment to the established junction means, and this repeating installation indicates the address or the address under junction demand to be.

[Claim 20] It is household-electric-appliances server equipment according to claim 18 or 19 characterized by performing the communication link to the 2nd household-electric-appliances device from said household-electric-appliances server equipment as a response to the transmission to the household-electric-appliances server equipment concerned from said 2nd household-electric-appliances device for every predetermined time.

[Claim 21] Household-electric-appliances server equipment according to claim 17 to 19 characterized by using a HTTP (Hyper Text Transfer Protocol) protocol as a protocol of the communication link between said 2nd household-electric-appliances device and the household-electric-appliances server equipment concerned.

[Claim 22] They are the in-house network to which the household-electric-appliances device using the service which the household-electric-appliances server equipment connected via the public network offers was connected, and the repeating installation installed between said household-electric-appliances server equipment. The effective address (local address) is assigned to said household-electric-appliances device only within said in-house network. A receiving means to receive the junction demand which has the information which shows the address or the address of said household-electric-appliances server equipment received from said household-electric-appliances equipment through said in-house network, Repeating installation characterized by having a transmitting means to perform transmission to said household-electric-appliances server equipment through said public network, according to the information which shows the address or the address of said household-electric-appliances server equipment under this junction demand which received.

[Claim 23] It is the repeating installation according to claim 22 characterized by performing the communication link between said 2nd household-electric-appliances device and said household-electric-appliances server equipment as the response with the transmission to said household-electric-appliances server equipment from said 2nd household-electric-appliances device for every predetermined time.

[Claim 24] Repeating installation according to claim 22 characterized by using a HTTP (Hyper Text Transfer Protocol) protocol as a protocol of the communication link between this repeating installation and said household-electric-appliances server equipment.

[Translation done.]

DETAILED DESCRIPTION

[Detailed Description of the Invention]
[0001]
[Field of the Invention] This invention relates to the repeating installation which relays the communication link between a household-electric-appliances device, the household-electric-appliances server equipment which provides a household-electric-appliances device with service via a public network and household-electric-appliances equipment, and household-electric-appliances server equipment.
[0002]
[Description of the Prior Art] In recent years, the household-electric-appliances device equipped with communication facility with other information processors etc. is developed. For example, IEEE1394 is known as a communications protocol between the so-called audiovisual equipments, such as a TV apparatus, image transcription equipment, and sound equipment. In this IEEE1394, the communication procedure between image audio equipments etc. is specified, and the actuation with which it cooperated between image audio equipments is attained.
[0003] Moreover, ECHONET (ECHONET) is known as a protocol which can be used, for example with the interface between power system household-electric-appliances devices (the so-called white-home-appliances device), such as an air conditioner, hot-water supply management equipment, a lighting system, a washing machine, a refrigerator, and a microwave oven. In this ECHONET, although communicated using wireless circuits, such as an electric wave and infrared radiation, what communicates using wire circuits, such as an others and electric light line, is standardized. Moreover, this ECHONET defines as an object the function which each device has, and unification of a control procedure is achieved in it. By using such ECHONET, the cooperation actuation between household-electric-appliances devices, a centralized control, etc. are possible.
[0004] Moreover, in these protocols, since direct communication cannot be carried out to networks, such as the Internet, if it remains as it is, the gateway unit which performs conversion with the TCP/IP protocol generally used in these networks is developed. By using such a gateway unit, two or more household-electric-appliances devices connected through the network can be controlled now from a remote place.
[0005] In order to absorb the difference in the environment for every user, or the difference in the demand for every user, the program which receives the management from a remote place is downloaded via a network to the above household-electric-appliances devices, or the program which receives the management from a remote place is beforehand stored in the household-electric-appliances device, and to consider as the operating state which accepts the management from a remote place via a network is desired.
[0006]
[Problem(s) to be Solved by the Invention] However, since the communications protocol unified by all household-electric-appliances devices as mentioned above is not established, the communications protocol which can be used by the household-electric-appliances device varies with the environment where the household-electric-appliances device concerned is installed.
[0007] Moreover, it was difficult from viewpoints, such as constraint of cost, to mount the program corresponding to all communications protocols in each household-electric-appliances device beforehand so that it could respond to all installation environments.

[0008] This invention is made in view of an above-mentioned technical problem, and aims at offering the household-electric-appliances device which can realize easily management from the remote place of the household-electric-appliances device by which installation environments differ, household-electric-appliances server equipment, a gateway unit, and a household-electric-appliances control system.
[0009]
[Means for Solving the Problem] In order to solve an above-mentioned problem, the household-electric-appliances device concerning claim 1 of this invention It is the household-electric-appliances device which applies for use of service to the household-electric-appliances server equipment which offers service through a public network. An identification information maintenance means to hold the identification information of the proper beforehand assigned so that it might belong to two or more categories and there might be no duplication between household-electric-appliances server equipment and the household-electric-appliances device which can perform a communication link, The means of communications which performs a communication link with household-electric-appliances server equipment through an in-house network or a public network, The identification information of the same owner's household-electric-appliances device It holds for every owner and is characterized by having a service request means to transmit the offer demand of service to the household-electric-appliances device (2nd household-electric-appliances device) of the identification information of the household-electric-appliances device (1st household-electric-appliances device) concerned, and the owner of the household-electric-appliances device concerned to the household-electric-appliances server equipment which manages offer of service for every owner.
[0010] Moreover, the household-electric-appliances device concerning claim 4 of this invention is a household-electric-appliances device using the service offered from the household-electric-appliances server equipment which offers service through a public network. An identification information maintenance means to hold the identification information of the proper beforehand assigned so that it might belong to two or more categories and there might be no duplication between household-electric-appliances server equipment and the household-electric-appliances device which can perform a communication link, The means of communications which performs a communication link with household-electric-appliances server equipment through an in-house network or a public network, The identification information of the same owner's household-electric-appliances device It holds for every owner. Offer of service to every owner The household-electric-appliances server equipment to manage a service request Starting of the service use software beforehand built into the service use software transmitted according to the offer demand of service to the identification information of the household-electric-appliances device which the household-electric-appliances device (1st household-electric-appliances device) to transmit transmitted, and the household-electric-appliances device (2nd household-electric-appliances device) concerned, or the household-electric-appliances device concerned It is characterized by having a receiving means to receive the command to direct through means of communications, and a service use means to perform the service use software concerned according to the service use software or the command which received, and to receive offer of the service from a household-electric-appliances server.
[0011] A household-electric-appliances device means the electronic equipment used at a home etc., for example, the so-called audiovisual equipments, such as a TV apparatus besides power system household-electric-appliances device ******** white-home-appliances devices, such as an air conditioner, hot-water supply management equipment, a lighting system, a washing machine, a refrigerator, and a microwave oven, image transcription equipment, and sound equipment, are contained.
[0012] Moreover, the household-electric-appliances server equipment concerning claim 12 of this invention It is household-electric-appliances server equipment which offers the service to a household-electric-appliances device through a public network. An identification information maintenance means to hold the identification information of the proper beforehand assigned so that there might be no duplication between the household-electric-appliances devices which belong to two or more categories and can perform household-electric-appliances server equipment and a communication link concerned for every owner, The identification information concerned of the 1st household-electric-appliances device transmitted from the household-electric-appliances device (1st household-electric-appliances device) which requires use of service, A receiving means to receive the use demand of service including the information which shows the household-electric-appliances device (2nd

household-electric-appliances device) using service, A check means to check whether the household-electric-appliances device corresponding to the information which shows the 2nd household-electric-appliances device which the owner corresponding to the identification information of the 1st household-electric-appliances device which received received is owned with reference to an identification information maintenance means, When it is checked that the owner corresponding to the use demand of service in a check means owns the 2nd household-electric-appliances device, starting of the service use software beforehand built into addressing to a household-electric-appliances device of the 2nd by service use software or the household-electric-appliances device concerned It is characterized by having a transmitting means to transmit the command to direct.

[0013] Moreover, the repeating installation concerning claim 22 of this invention They are the in-house network to which the household-electric-appliances device using the service which the household-electric-appliances server equipment connected via the public network offers was connected, and the repeating installation installed between said household-electric-appliances server equipment. The effective address (local address) is assigned to the household-electric-appliances device only within the in-house network. A receiving means to receive the junction demand which has the information which shows the address or the address of household-electric-appliances server equipment received from household-electric-appliances equipment through the in-house network, It is characterized by having a transmitting means to perform transmission to household-electric-appliances server equipment through a public network, according to the information which shows the address or the address of household-electric-appliances server equipment under junction demand which received.

[0014]

[Embodiment of the Invention] This invention is applicable to the household-electric-appliances control system which manages for example, a household-electric-appliances device collectively.

[0015] The household-electric-appliances control system concerning the 1st operation gestalt which applied the 1st operation gestalt (configuration) this invention For example, the 1st 10 and the private network of the 2nd network 20 grade which were installed in the building 1 as shown in drawing 1 , The household-electric-appliances server equipment 40 and the terminal unit 50 which were connected through these networks 10 and 20 and the 3rd network (public networks, such as the Internet) 30 of the building 1 exterior, It has personal digital assistant equipment 70 connected to a network 30 through a base station 65 and a gateway unit 60.

[0016] The 1st network 10 is a network where the household-electric-appliances device of for example, an acoustic-imaging (AV:Audio Visual) system is connected, for example, consists of a cable network using protocols, such as IEEE1394, as the physical layer. This network 10 is equipped with the image transcription equipment 13 which performs record/playback of image information using record media, such as the television receiver (TV equipment) 12 connected through the wire circuit 11, a magnetic tape, a magnetic disk, and an optical disk, the sound equipment 14 which performs record/playback of speech information, such as music, using record media, such as a magnetic tape, a magnetic disk, an optical disk, and memory, and the router equipment 19 which perform protocol conversion of the physical layer of a wire circuit 11 and a network 30, path control, etc.

[0017] TV equipment 12 For example, communication link I/F121 which performs the communication link with a wire circuit 11, For example, the input section 122 which inputs the directions from a user through remote control, the switch formed in the body, The receive section 123 which receives broadcast of an image, data, etc., and the web browser 124 which acquires the contents offered by HTTPd42a, It has the display 125 which displays the image in which the demand of directions to the image or user whom the receive section received is shown, the control section 126 which controls actuation of the whole equipment, and the household-electric-appliances ID attaching part 129 which holds the household electric appliances ID of a proper for each device of every.

[0018] This TV equipment 12 can use now application service of the service offered by the service (for example, contents distribution) offered by household-electric-appliances server equipment 40, or the household-electric-appliances server equipment 40 concerned.

[0019] Router equipment 19 is equipped with communication link I/F291 which performs the communication link with a network 30, communication link I/F292 which performs the communication link with a network 10, and the routing control section 193 which performs processing of path control etc.

[0020] Moreover, the 2nd network 20 is a network where the household-electric-appliances device *******
white-home-appliances device of for example, a power system is connected, for example, consists of a wireless

network using the radio protocol as the physical layer. This network 20 is equipped with the router equipment 29 which performs path control of the air conditioner 22 connected through the wireless circuit 21, hot-water supply management equipment 23, a refrigerator 24, a microwave oven 25 (not shown [a part]), and the wireless circuit 21 and a network 30 etc. In addition, this network 20 is not restricted to this wireless network, for example, is good also as a cable network using the power line etc. as a channel etc.

[0021] An air conditioner 22 For example, radio I/F221 which performs the communication link with router equipment 29 through the wireless circuit 21, For example, the input section 222 which inputs the directions from a user through remote control, the switch formed in the body, For example, radio I/F223 which performs above-mentioned router equipment 29 and radio using infrared radiation, IEEE802.11, or Bluetooth (trademark), With the temperature sensor 224 which measures a room temperature, for example, the exterior unit control section 225 which controls the exterior unit which has a compressor, a heat exchange machine, etc., It has the control section 226 which controls actuation of exterior unit control-section 225 grade according to the directions supplied through household-electric-appliances server equipment 40, and the household-electric-appliances ID attaching part 229 which holds the household electric appliances ID of a proper for each device of every.

[0022] Hot-water supply management equipment 23 is equipped with router equipment 29, communication link I/F231 which performs a communication link, the display 232 which has the display screen, the input section 233 which inputs the directions from a user, and a display 232 and the control section 234 which controls input section 233 grade through the wireless circuit 21.

[0023] The refrigerator 24 is equipped with router equipment 29, communication link I/F241 which performs a communication link, the display 242 which has the display screen, the input section 243 which inputs the directions from a user, and a display 242 and the control section 244 which controls input section 243 grade through the wireless circuit 21.

[0024] The microwave oven 25 is equipped with router equipment 29, communication link I/F251 which performs a communication link, the display 252 which has the display screen, the input section 253 which inputs the directions from a user, and a display 252 and the control section 254 which controls input section 253 grade through the wireless circuit 21.

[0025] Router equipment 29 is equipped with communication link I/F291 which performs the communication link with a network 30, above-mentioned communication link I/F221 and radio I/F292 which performs radio, and the routing control section 293 which performs processing of path control etc.

[0026] A network 30 consists of a network using the optical fiber as transmission lines, such as a network or FTTH which used the metal cable as transmission lines, such as ISDN, CATV, ADSL, and an analog dedicated line, and performs the **** communication link for TCP/IP protocols in this network 30, for example. Or you may make it the above networks constitute the part outside a building 1 for the part in the building 1 of the networks 30 using the network of for example, IEEE802.3 grade.

[0027] Household-electric-appliances server equipment 40 consists of an information processor which has auxiliary storage units, such as MPU, memory, and HDD, and processing of control of actuation of the device connected to each above-mentioned networks 10 and 20 etc. is performed. this -- household electric appliances -- a server -- equipment -- 40 -- a communication interface (I/F) -- 41 -- a terminal unit -- 50 -- or -- a personal digital assistant -- equipment -- 70 -- from -- directions -- following -- each -- a network -- ten -- 20 -- connecting -- having -- **** -- a device -- control -- etc. -- service -- or -- being concerned -- service -- an application -- service -- etc. -- providing -- service provision -- the section -- 42 -- this -- service provision -- the section -- service -- offer -- a sake -- using -- data -- etc. -- holding -- a database -- (-- DB --) -- 43 -- having -- **** .

[0028] Communication link I/F41 performs communications control for using the service offered by the service provision section 42 by network 30 course etc.

[0029] the HTTP server (HTTPd) 42 which the service provision section 42 makes a front end the web browser which is functioning in TV equipment 12, a terminal unit 50, and 70 grades, and offers service -- it has DB engine 42b which controls access to a and DB43 etc. Moreover, DB43 is equipped with customer DB42a holding the information about each user (customer), and household-electric-appliances DB42b holding information, such as a function about each household-electric-appliances device.

[0030] In addition, although the router equipments 19 and 29 are respectively formed in the network 10 and the network 20 with the above-mentioned configuration, it is good also as a configuration which you may make it form only one router equipment which has communication link I/F corresponding to wire-circuit 11 and wireless circuit 21 each, or subdivides a network 10 or a network 20, and forms three or more router equipments.

[0031] Above-mentioned TV equipment 12, an air conditioner 22, and — are the so-called "network household electric appliances" which mounted the TCP/IP protocol respectively. The IP address (global address) of the proper which does not have duplication to all the device respectively connected to a network 30 is assigned to these TV equipments 12, an air conditioner 22, and —. Although the version of this IP address may be IPv4 or may be IPv6, it is taken as the IP address of the same version with each household-electric-appliances devices 22 and 23 and the router equipment 29 which are connected to the network 20.

[0032] Moreover, in this household-electric-appliances control system, the identification information (household electric appliances ID) of at least one proper is respectively assigned to all the devices managed with household-electric-appliances server equipment 40. Even if the manufacturers of a device differ, these household electric appliances ID are managed so that there may be no duplication. At the time of manufacture, these household electric appliances ID are embedded at the household-electric-appliances ID attaching part 129,229, and are held so that it cannot change. Furthermore, by approaches, such as encryption, when required, it is held so that household electric appliances ID may not be known directly. Specifically, it can mount as registers in IC chip which constitutes control sections 126 and 226 etc.

[0033] As household electric appliances ID, the MAC (Media Access Control) address of an IP address (global address), Bluetooth-ID, and the EUI64 grade of IEEE1394 can also be used as it is. Since these addresses are managed so that there may be no duplication each whole device essentially, they can be contributed to reduction of the management burden of household electric appliances ID by diverting these as household electric appliances ID. In addition, even if it is the case where other addresses are diverted as household electric appliances ID in this way, these addresses and household electric appliances ID are managed as an independent value which has another semantics logically, and in order that household-electric-appliances server equipment 40 may identify each household-electric-appliances device, they are used.

[0034] In customer DB43a, for example, the information for identifying each user, as shown in drawing 2 (user name), The household electric appliances ID of all the household-electric-appliances devices that information (User Information) and the user concerned own about the user concerned (the household electric appliances ID of possession household electric appliances) The information (classification and part number) which shows the classification and the part number of the household-electric-appliances device concerned, the information which shows the correspondence procedure to the household-electric-appliances device concerned (access:, for example, IPv6, IPv4, etc.), The correspondence table which matches the information (remote-control propriety) which shows the propriety of the address (address) of the possession household-electric-appliances device concerned and remote control of the possession household-electric-appliances device concerned is stored.

[0035] In addition, you may be the value of the name (for example, DNS name) which may be the value of an IP address itself and is assigned to a household-electric-appliances device about the address of said household-electric-appliances device. To be a name, household-electric-appliances server equipment needs to do first the activity which changes the value of this name into an IP address.

[0036] A user name is good also as information which is sufficient for each user if it is the information on a proper, for example, is given to him for convenience on management of a customer number etc.

[0037] The information about a user consists of information which shows liking of the address of the user concerned, a name, age, an occupation, the telephone number, the provider (provider) of network connection service, an e-mail address, and the user concerned etc., for example. Moreover, you may make it the description approach of the information about a user include all the family's devices by making information of the householder instead of one certain user into representation, and it may register the firm name as an owner about the household-electric-appliances device which a certain firm holds.

[0038] Moreover, the household electric appliances ID of possession household electric appliances are the household electric appliances ID currently held at the above-mentioned household-electric-appliances ID attaching parts 129 and 229. In case a user purchases a household-electric-appliances device, these household

electric appliances ID are matched with the name of the user concerned etc., and are inputted into DB engine 42b. In case a user purchases a household-electric-appliances device, the form in which the address, a name, etc. are entered from a dealer etc. is offered, the salesclerk of a dealer etc. inputs the contents which the user filled in through the terminal unit connected to household-electric-appliances server equipment 40 by the network 30 course, and, specifically, the terminal unit concerned supplies the inputted information to DB engine 42b.

[0039] Or the application of use of services, such as remote operation which minded the household-electric-appliances server at the time of this purchase, may be accepted. A user provides with the use application form in which the information which specifies the service used with the address, a name, etc. in this case is written down, and the salesclerk of a dealer etc. supplies the household electric appliances ID of information, such as the address, the name, age, an occupation, the telephone number, an electronic mail, and liking, and the information which shows the service to be used which the user wrote down in the use application form, and the purchased device to DB engine 42b through a terminal unit etc. like ****.

[0040] The information supplied to DB engine 42b as mentioned above is supplied to customer DB43a through DB engine 42b, and information, such as the household electric appliances ID which show the household-electric-appliances device which the user purchased, matches it with the user name of the user concerned, and User Information, and it is recorded on the correspondence table in customer DB43a.

[0041] In addition, entry of each item of a use application form makes only the thing required for offer of service indispensable, and a necessarily unnecessary thing may be taken as a user's arbitration. Moreover, registration of information, such as a user's address and a name, and household electric appliances ID may be the time of applying for use of the service which an after [purchase] at-any-time [not the time of the purchase of a device but] or household-electric-appliances server offers etc. Although the operator of household-electric-appliances server equipment 40 etc. may be made to input this application into DB43 according to the application form mailed by the telephone or user from a user, a user operates the web browser currently performed with the terminal unit connected to networks 10 and 20 or a network 30, and may be made to input it via HTTPd42a.

[0042] In this customer DB43a, a part of User Information [at least], such as every user name, the same user name, and the address, manages the household electric appliances ID of the registered device etc. for every same user. He is trying for all conditions, such as a user name and the address, to manage the information about the household-electric-appliances device which the user concerned owns for every same user in this drawing 2 .

[0043] By considering customer DB43a as such a configuration, a list of the household-electric-appliances device which the user concerned owns by using a user name or User Information as a search key can be searched now.

[0044] Moreover, it matches with the household electric appliances ID of each device, and the information which shows the classification (for example, exceptions, such as TV equipment, image transcription equipment, an air conditioner, and hot-water supply management equipment) of a household-electric-appliances device, the manufacturer/part number of a household-electric-appliances device, the date of manufacture, purchase hysteresis, maintenance record, etc. is recorded on this customer DB43a.

[0045] moreover, it is shown in above-mentioned drawing 2 R> 2 at this customer DB43a -- as -- the access approach ("access": -- the information which shows exceptions, such as the approach of networks, such as the Internet, a telephone, or others, --) from a household-electric-appliances server to the household-electric-appliances device concerned [in drawing 2] The information which always shows exceptions, such as the approach of connection, the so-called dial up which sets up connection at the time of the need, or others, The addresses (information which shows the addresses, such as an IP address, the telephone number, and a proxy server, information which shows the access approach) of the household-electric-appliances device concerned match with the household electric appliances ID of each household-electric-appliances device the information which shows whether address translation etc. may enter on the way, and it is recorded.

[0046] In addition, at the time of the purchase of a household-electric-appliances device, or the application of service, a part of information corresponding to household electric appliances ID can be a blank. For example, in case the IP address of a household-electric-appliances device connects the household-electric-appliances device concerned to a network, in order to set it up, it is thought at the time of purchase that the case of being unknown is common.

[0047] In this case, before offer of service is started, the information on access in above-mentioned drawing 2 ,

the address, etc. is registered. An IP address is assigned to this household-electric-appliances device in case the household-electric-appliances device which the user purchased is specifically connected to the network 20 grade in **. Then, through router equipment 29 grade, the household-electric-appliances device concerned supplies the information which shows the household electric appliances ID of a self-device, the assigned IP addresses (the IPv four address, the IPv6 address, DNS name, etc.), and the access approach to DB engine 42b, and requires registration of it. Each household-electric-appliances device has held the address of household-electric-appliances server equipment 40, the access approach to household-electric-appliances server equipment 40, etc. beforehand, and each household-electric-appliances device supplies household electric appliances ID, an IP address, etc. to household-electric-appliances server equipment 40 according to these.

[0048] Thus, if household electric appliances ID, an IP address, etc. are supplied, DB engine 42b of household-electric-appliances server equipment 40 will register the supplied household electric appliances ID, an IP address, etc. into customer DB43a.

[0049] In addition, although it is not limited to the configuration shown in this drawing 2 and has the same logical structure as this customer DB43a, physically, multiple files etc. distribute, customer DB43a is stored in them, and you may make it constitute it by matching these with a pointer.

[0050] Moreover, as shown in drawing 3 , for each household-electric-appliances device of every, an available function is matched with the information (classification, part number) for identifying the household-electric-appliances device here by household-electric-appliances DB43b, and is held at it. Moreover, the image which matches with household electric appliances ID or a product part number, and shows a general view of specifications, such as the information about a household-electric-appliances device, for example, a dimension, and power consumption, or the household-electric-appliances device concerned to this household-electric-appliances DB43b may be stored.

[0051] (Actuation)
(1) It is at supply of the program over a household-electric-appliances device, and the time, and the household-electric-appliances device of above-mentioned TV equipment 12 and air-conditioner 22 grade is constituted so that actuation can be managed according to a communication message with the exterior through communication link I/F121 or radio I/F221 etc. For this reason, household-electric-appliances server equipment 40 can be connected with these devices, and the operating state using the service offered from household-electric-appliances server equipment 40, then the service which the household-electric-appliances server equipments 40, such as remote operation, remote maintenance, or software distribution, offer, for example can be used now.

[0052] With this operation gestalt, since the TCP/IP protocol is mounted in the household-electric-appliances device connected to each networks 10 and 20, if it connects with a network 30 through the router equipments 19 and 29, a communication link can be performed with household-electric-appliances server equipment 40.

[0053] The control section of each household-electric-appliances device has held beforehand information (for example, "server.kaden.co.jp" etc.), such as URL (Unified Resource Locator) which shows the address of the household-electric-appliances server equipment 40 which offers service. Or IP addresses (for example, "Z" etc.) may be held as they are.

[0054] Or you may make it acquire the address of the household-electric-appliances server equipment 40 which offers service from the data which the receive section 123 grade of TV equipment 12 received, for example. It specifically matches with images, such as commercials of a household-electric-appliances device (for example, air conditioner 22) which offer service, and the address of the information for identifying the household-electric-appliances device concerned and the household-electric-appliances server equipment 40 which offers the service to the household-electric-appliances device concerned is supplied.

[0055] Or the address of household-electric-appliances server equipment 40 is acquired, and a user inputs the acquired address for example, through web browser 124 grade, and may be made to supply the household-electric-appliances device which receives offer of the service concerned for the inputted address separately.

[0056] Moreover, in order for a user to actually use the service which household-electric-appliances server equipment 40 offers, it is necessary to change into the condition that the program concerned which offers the program for performing processing for using the service concerned for a household-electric-appliances device, or is beforehand mounted in the household-electric-appliances device can be performed.

[0057] By the way, the demand of offer of service etc. to household-electric-appliances server equipment 40 is performed using the device of the terminal unit 50, the personal digital assistant equipment 70, or the TV equipment 12 grade which has the display function which displays the directions to the input function and user who input the directions from a user etc.

[0058] For example, in receiving offer of service of the remote operation to an air conditioner 22, a user operates TV equipment 12 and demands offer of service of the remote control concerned of household-electric-appliances server equipment 40.

[0059] As shown in drawing 4 , a user inputs information, such as the address with an above-mentioned user, and a name, etc. into the application form which the web browser 124 of TV equipment 12 displays on a display 125, and, specifically, the application of remote-control service of an air conditioner 22 is directed (S1). This application form may be beforehand stored in TV equipment 12 like the above-mentioned household electric appliances ID. Or only the URL of the form for which it applies is stored in TV equipment 12, and a web browser 124 applies from the URL concerned, and you may make it acquire form according to the directions from a user.

[0060] If a user inputs the information for identifying the service (in this case, remote control of an air conditioner 22) which requires the information about users, such as the address, a name, etc. which were inputted into application form, household electric appliances ID (in this case, "A" which is the household electric appliances ID of TV equipment 12), and offer etc., a web browser 124 will generate an application message including such information, will encipher this, and will transmit to household-electric-appliances server equipment 40. Specifically, this application message is enciphered and transmitted by procedures, such as SSL (Secure Sockets Layer). The transmitted application message is supplied to household-electric-appliances server equipment 40 through communication link I/F121, router equipment 19, and a network 30 (S2). In addition, the household electric appliances ID of TV equipment 12 may have composition which is automatically passed to household-electric-appliances server equipment 40, even if a user does not input.

[0061] The supplied application message is supplied to DB engine 42b through communication link I/F41 and HTTPd42a. The classification, the part number, etc. of the information (user name) of the user corresponding to [apply, extract the household electric appliances ID in a message, and / with reference to customer DB43a] the household electric appliances ID concerned in DB engine 42b to whom DB engine 42b was supplied, and a household-electric-appliances device are acquired (S3). Furthermore, DB engine 42b acquires the information on the image of the household-electric-appliances device concerned etc. from household-electric-appliances DB43b, and supplies it to HTTPd42a. HTTPd42a generates the data of the data (for example, HTML (Hyper Text Markup Language) format or XML(eXtensible) Markup Language) format on which the check screen to the application of offer of service including the definition of the carbon button which inputs display directions of the supplied image data and the check directions from a user etc. is displayed. The generated data are supplied to TV equipment 12 through communication link I/F41 (S4).

[0062] In the data of such a check screen, DB engine 42b may define the display of the purchase hysteresis acquired from customer DB43a, maintenance hysteresis, etc., for example.

[0063] By the way, before creating the data of such a check screen, a function with the available household-electric-appliances device corresponding to the classification and the part number of the household-electric-appliances device which DB engine 42b acquired in above-mentioned S3 with reference to the correspondence table stored in household-electric-appliances DB43b is checked, and you may make it judge whether it is actually available in the service which the user is demanding. In this case, if HTTPd42a has the available service which the user demanded, it will perform processing of S4, but when not available, generates the data in which the purport which is not available is shown separately, and transmits to TV equipment 12.

[0064] By performing such processing, a user can recognize the use propriety of service, can perform demand processing of offer of service again, and can contribute to improvement in operability.

[0065] If the data of the above check screens are supplied, a web browser 124 will display the screen according to the data concerned on a display 125, and will require a check of a user (S5).

[0066] If the user who looked at such a check screen operates the input section 122 and inputs check directions, a web browser 124 will generate the message of an Acknowledgement and will transmit to household-electric-appliances server equipment 40 (S6).

[0067] If such an Acknowledgement is supplied, HTTPd42a transmits a predetermined command to an air conditioner 22, after processing authentication of an air conditioner 22, exchange of a key, etc. by SSL (S7), and after making an air conditioner 22 into the condition of receiving a program, the program which receives remote control will be supplied (S8).

[0068] This program will be supplied to a control section 225 through router equipment 29 and radio I/F221, will be stored in the memory with which a control section 225 is equipped, and will be in a running state (S9).

[0069] It is in this condition, for example, if the command of remote control is supplied to air-conditioner 22 from household-electric-appliances server equipment 40, an air conditioner 22 will be in the condition that actuation can be controlled according to the command concerned.

[0070] If offer of a program is successful, DB engine 42b will change from "no" the information in customer DB43a corresponding to the household-electric-appliances device which offered the program (remote-control propriety) into "it is good."

[0071] By the way, in this household-electric-appliances control system, direct communication can be carried out now with the relation of end to end (End to End) using the same protocol (for example, TCP/IP) between the air conditioners 22 which receive offer of the TV equipment 12 which requires offer of household-electric-appliances server equipment 40 and service, or service. For this reason, the program which applied through router equipment 19 as mentioned above, supplied the message to household-electric-appliances server equipment 40, and was supplied according to this can be supplied to the air conditioner 22 which receives offer of service as it is through router equipment 29.

[0072] Moreover, in this household-electric-appliances control system, the household electric appliances ID of a proper were held to each household-electric-appliances device, and the household electric appliances ID of the household-electric-appliances device which each user owns are managed. For this reason, in the household-electric-appliances server equipment 40 side, the user corresponding to household electric appliances ID can be specified only by providing the demand of offer of service with household electric appliances ID.

[0073] Moreover, by holding the classification and the part number of the household-electric-appliances device corresponding to household electric appliances ID, and the available function, the available function corresponding to household electric appliances ID can be specified, and it can check at the time of the application of offer of service.

[0074] In addition, although above-mentioned explanation showed the case where a user demanded offer of remote-control service of an air conditioner 22 of household-electric-appliances server equipment 40 using TV equipment 12 As long as it has the display which performs the display to the input section and the user who input the directions from a user, it may be made to require service of household-electric-appliances server equipment 40, for example using other terminal unit or other household-electric-appliances devices of a terminal unit 50 and personal digital assistant equipment 70 grade.

[0075] In above-mentioned explanation, moreover, in an application message The household electric appliances ID of a household-electric-appliances device ("A" which is the household electric appliances ID of TV equipment 12 in an above-mentioned example) which transmit the application message concerned are transmitted. The list of household electric appliances ID of the household-electric-appliances device which the user of the household-electric-appliances device by which household-electric-appliances server equipment 40 transmitted the application message concerned with reference to customer DB43a owns is acquired. Data (for example, data of a HTML format or an XML format) including description of the processing for performing displays corresponding to these household electric appliances ID and these selections are created. A web browser 124 is supplied through HTTPd42a, and you may make it choose household electric appliances ID according to the directions which the user inputted according to this. Moreover, you may make it specify the household electric appliances ID of the household-electric-appliances device which receives offer of service in an above-mentioned application message.

[0076] Moreover, although above-mentioned explanation showed the case where the service whose user receives offer was specified in an above-mentioned application message In the household-electric-appliances device corresponding to the household electric appliances ID to which DB engine 42b was supplied from the TV equipment 12 grade an available function It acquires from the correspondence table currently held at household-electric-appliances DB43b, data including description of the processing which performs displays and these

selections of an available function are generated, and it applies for the function directed by the user according to this, and may be made to consider as the target service. Or you may make it check to a user whether it is good with the service which DB engine 42b guessed and guessed that service for an application was according to the function acquired from household-electric-appliances DB43b.

[0077] (2) Use of service (remote control)
As mentioned above, if the program for receiving the remote-control service from household-electric-appliances server equipment 40 will be in a running state, an air conditioner 22 will be in the condition of supervising the input of household-electric-appliances server equipment 40 to a directive command other than the directions input from the input section 222.

[0078] Although a user can use remote-control service even if he uses any of a terminal unit 50 or personal digital assistant equipment 70, he explains the case where personal digital assistant equipment 70 is used, by the following explanation.

[0079] If a user directs use of remote-control service, personal digital assistant equipment 70 will perform log in processing to household-electric-appliances server equipment 40 (S11). In this log in processing, personal digital assistant equipment 70 transmits authentication information to household-electric-appliances server equipment 40. If it checks that authentication information is just, household-electric-appliances server equipment 40 will exchange the key for the encryption communication link by SSL etc. between personal digital assistant equipment 70. moreover, him, such as an input of the user ID and the password which were beforehand assigned to the user if needed, -- authentication for a check may be performed.

[0080] After exchange of a key is completed, the web browser 74 of personal digital assistant equipment 70 requires transmission of the data (household-electric-appliances control page) for directing remote control of an air conditioner 22 from HTTPd42a (S12).

[0081] HTTPd42a supplies the data with which the selection input of the input column or command which inputs a command etc. was defined to a web browser 74 as data of a household-electric-appliances control page to such a demand (S13).

[0082] If such data are supplied, a web browser 74 will display the image according to the data concerned on a display 73. The display to which the input of the temperature set up, for example is urged in this image is included. If a user requires that the key of "2" and "5" prepared in the input section 72 should be pressed, and laying temperature should be made into 25 degrees C from this image (S14) The message of the purport which makes laying temperature of an air conditioner 22 25 degrees C is generated by the web browser 74, and transmits the message (temperature setting demand) concerned to household-electric-appliances server equipment 40 (S15).

[0083] If such a temperature setting demand is received, DB engine 42b will acquire the information on the access approach (access in drawing 2 R> 2) from the correspondence table in customer DB43a to the air conditioner 22 of the user concerned, the address, etc. The service provision section 42 performs authentication processing and the message exchange of a key between air conditioners 22 by the acquired access approach (S16).

[0084] If these processings are successful, the service provision section 42 will encipher the temperature setting demand from the above-mentioned web browser 74, will attach a digital signature, and will supply it to an air conditioner 22 (S17).

[0085] The signature of the supplied temperature setting demand checks a control section 225, if just, a temperature setting demand will be decrypted (S18), and it will interpret and execute the decrypted command (S19).

[0086] Furthermore, when such remote control is successful, a control section 225 generates the information which shows that, it transmits to household-electric-appliances server equipment 40 (S20), household-electric-appliances server equipment 40 transmits this to personal digital assistant equipment 70 (S21), and you may make it notify the purport that remote control was successful with the display 73 (S22).

[0087] (Effectiveness) As explained above, the household-electric-appliances device connected to the network in ** from the terminal unit of remote places, such as personal digital assistant equipment, is easily controllable by the household-electric-appliances control system of this 1st operation gestalt. Therefore, even if it is the household-electric-appliances device by which installation environments differ, the management from a remote place is easily realizable.

[0088] (Modification) The command uniquely specified also by the standardized command which is not restrained, for example, is defined by HTTP etc. is sufficient as especially the protocol used in the communication link between the personal digital assistant equipment 70 under processing shown in the communication link between the TV equipment 12 under processing shown in still more nearly above-mentioned drawing 4 , and household-electric-appliances server equipment 40, or above-mentioned drawing 5 , and household-electric-appliances server equipment 40.

[0089] When using HTTP, even if it is the case where equipments, such as a fire wall and a proxy, are arranged between household-electric-appliances server equipment 40, the communication link between household-electric-appliances server equipment 40 can be easily enabled by changing a setup of these equipments suitably.

[0090] In the 2nd operation gestalt above-mentioned household-electric-appliances control system of the 1st operation gestalt, the TCP/IP protocol is respectively mounted in the household-electric-appliances device connected to the 2nd network 20 of an air conditioner 22 and hot-water supply management equipment 23 grade, and the IP address was respectively assigned to each household-electric-appliances devices 22 and 23.

[0091] However, it can also constitute from ECHONET so that it may connect with a network 30 through the gateway unit which changes the protocol of ECHONET, and protocols, such as TCP/IP, into it since it is not necessary to necessarily mount protocols, such as TCP/IP, in each device.

[0092] (Configuration) In the household-electric-appliances control system concerning the 2nd operation gestalt of this invention, as shown, for example in drawing 6 , it has the network 80 instead of the network 20 in above-mentioned drawing 1 . In this network 80, it differs in the above-mentioned network 20, and communicates with the original protocol of ECHONET.

[0093] Unlike the 1st above-mentioned operation gestalt, the IP address is not assigned to the air conditioner 22 and the hot-water supply management equipment 23 which are connected to this network 80. In addition, household electric appliances ID are assigned to each devices 22, 23, and 89 as a value of a proper like the 1st above-mentioned operation gestalt.

[0094] For this reason, in this network 80, it has the gateway unit 89 which changes the protocol (ECHONET) used in the network 80 instead of above-mentioned router equipment 29, and the protocol (TCP/IP) used in the network 30.

[0095] This gateway unit 89 is equipped with communication link I/F891 for connecting with a network 30, ECHONET I/F892 for connecting with an air conditioner 22 and hot-water supply management equipment 23 grade through the wireless circuit 21 which constitutes a network 80, and the protocol conversion section 893 that performs protocol conversion. This gateway unit relays the message of addressing containing the household electric appliances ID from for example, a household-electric-appliances device etc. to household-electric-appliances server equipment 40 etc. between a network 80 and a network 30. Solution of a DNS name and protocol conversion for message junction are carried out, and, specifically, the communication link between household-electric-appliances server equipment 40 and the household-electric-appliances device of air-conditioner 22 grade is relayed.

[0096] In ECHONET used in the network 80, data are transmitted and received in a packet (ECHONET packet) unit as shown in drawing 7 . This ECHONET packet consists of a part for a header unit (ECHONET header), and a payload part (ECHONET data).

[0097] The information (destination ECHONET address) for identifying the device of a transmission place, the information (source echo network address) for identifying the device of a transmitting agency, etc. are stored in the ECHONET header. Each address is expressed with the ECHONET address assigned for every device in ECHONET.

[0098] Moreover, the destination URI (Unified Resource Identifier) of the message which I have transmitted to household-electric-appliances server equipment 40 by the information (transmitting agency object) which shows the object in the device of a transmitting agency, the information (transmission place object) which shows the object in the device of a transmission place, the property, service, and the gateway unit 89, the transfer parameter of a body, etc. are stored in the ECHONET data.

[0099] In ECHONET, a communications partner is specified by the ECHONET address assigned to each device and the object which shows the function in each device. For example, in the air conditioner 22, objects which acquire a

room temperature, for example, such as acquisition/modification of an object and laying temperature, are specified. The junction object which receives the demand of junction to a network 30 is prescribed by the gateway unit 89. The junction object which requires junction is prescribed to the junction object of a gateway unit 89 by the household-electric-appliances device with the need of requiring the junction addressed to network 30 from this gateway unit 89.

[0100] In addition, as for this drawing 7 , the IP address shows the example of the ECHONET packet which transmits to addressing to a junction object of a gateway unit 89 to transmit the below-mentioned polling demand to addressing to URI whose directory name is "/kaden" by "Z" (household-electric-appliances server equipment 40).

[0101] Moreover, the TCP/IP packet used in the network 30 consists of a header and a payload, as shown in drawing 8 .

[0102] The IP address (destination IP address) of the device of a transmission place, the IP address (source IP address) of the device of a transmitting agency, the port number of a transmission place, etc. are stored in the header. Moreover, the message of addressing to HTTPd42a for example, is stored in a payload.

[0103] In addition, this drawing 8 shows the example of the packet which a gateway unit 89 transmits to household-electric-appliances server equipment 40 according to the ECHONET packet (packet of polling) shown in above-mentioned drawing 7 .

[0104] - the junction of a packet -- in order to perform conversion with the above ECHONET packets and a TCP/IP packet, the protocol conversion section 893 of a gateway unit 89 is equipped with the TCP/IP packet transceiver section 301 which transmits and receives a TCP/IP packet, the ECHONET packet transceiver section 302 which performs transmission and reception of the ECHONET packet, and the packet transducer 303 which performs conversion of a packet as shown in drawing 9 . This ECHONET packet transceiver section 302 or the packet transducer 303 is equivalent to an above-mentioned junction object.

[0105] In this household-electric-appliances control system, the communication link to the household-electric-appliances device connected to the network 20 is performed like the 1st above-mentioned operation gestalt according to the HTTP protocol which is a higher-level protocol on a TCP/IP protocol from household-electric-appliances server equipment 40.

[0106] For this reason, the correspondence table attaching part 310 holding a table for the packet transducer 303 to perform conversion of a HTTP packet and the ECHONET packet, The status line header extract section 311 which extracts a status line header from the header of the HTTP packet from the household-electric-appliances server equipment 40 supplied from the TCP/IP packet transceiver section 301, The transfer electrical-parameter-extraction section 312 which extracts a transfer parameter from the payload of a HTTP packet, It has the transfer parameter insertion section 313 which inserts a transfer parameter in the ECHONET packet, and the echo packet formation section 314 which forms an echo packet and is supplied to the ECHONET packet transceiver section 302.

[0107] Moreover, this packet transducer 303 is equipped with the URI extract section 321 which extracts the destination URI from above-mentioned echo packet data, the transfer electrical-parameter-extraction section 322 which extracts a transfer parameter from echo packet data, the transfer parameter insertion section 323 which inserts a transfer parameter in a HTTP packet, and the HTTP packet formation section 324 which forms the HTTP packet addressed to household-electric-appliances server equipment 40.

[0108] As shown in drawing 1010 , the correspondence table for conversion of a HTTP packet and the ECHONET packet is stored in the correspondence table attaching part 310.

[0109] The correspondence table showing the correspondence relation between the command by the above-mentioned ECHONET packet and the command (for example, the HTTP command to HTTPd42a) by the HTTP packet is held at the correspondence table attaching part 310. By referring to this correspondence table, the correspondence relation between the commands and the HTTP commands by the ECHONET packet can be known.

[0110] Specifically, the ECHONET address (for example, ECHONET address of an air conditioner 22 [E1]) of the household-electric-appliances device which performs the destination URI (for example, directory of HTTPd42a of an IP address [Z] and the address concerned [/kaden]) in the ECHONET data, URI, and a communication link

concerned is matched and stored in this correspondence table.

[0111] In this household-electric-appliances control system, the protocol conversion between a network 80 and a network 30 is possible by the gateway unit 89 of such a configuration. 1 to 1 (end to end) can be communicated now between the application levels currently performed by this by the household-electric-appliances device connected with household-electric-appliances server equipment 40 in the network 80. In addition, a code may be applied to this communication link in the form of end to end in this case. It becomes possible to communicate arbitration between household-electric-appliances server equipment and a household-electric-appliances device, without being known by the gateway unit by doing in this way.

[0112] - It is at polling and the time and conversion of a network 80 and the packet between network 30 is attained as mentioned above. Thereby, from the air conditioner 22 connected to the network 80, and hot-water supply management equipment 23, URI of household-electric-appliances server equipment 40 is specified, and a communication link can be started now. However, from the household-electric-appliances server equipment 40 side, the household-electric-appliances device of air-conditioner 22 grade connected through the gateway unit 89 cannot be specified directly, and a communication link cannot be started. Because, a household-electric-appliances device is because it is not set up so that the communication link by IP can be performed between direct household-electric-appliances server equipment.

[0113] For this reason, in this household-electric-appliances control system, transmission is started to household-electric-appliances server equipment 40 for every predetermined time interval from the household-electric-appliances device side which receives offer of remote-control service. The send action for such every predetermined spacing is called polling. If there is a response from the household-electric-appliances server equipment 40 to polling, the reception concerned will be received, but the household-electric-appliances device which polled stands by till the time of day which should carry out the next polling, when there is no response into predetermined time (when the control command from a household-electric-appliances server etc. is not carried in the packet which is answerback of this polling etc.).

[0114] if household-electric-appliances server equipment 40 does not have the need for transmission over a household-electric-appliances device -- polling -- ignoring (null -- you answering) -- if there is the need for transmission over the household-electric-appliances device concerned, transmission will be started as a response to polling.

[0115] In this household-electric-appliances control system, such polling processing has realized initiation of the communication link from the household-electric-appliances server equipment 40 side substantially.

[0116] In addition, about this polling period, the default is defined and modification may be possible by control from household-electric-appliances server equipment about this value at any value.

[0117] - Customer's DB configuration and household-electric-appliances server equipment 40 In order to realize offer of the service under the environment where a household-electric-appliances device with the need of performing such polling processing, and the household-electric-appliances device which can perform direct communication with a TCP/IP protocol are intermingled For example, as shown in drawing 11 R> 1, the information which shows whether the direct communication by TCP/IP is possible or there is any need for polling processing is held as access which shows the correspondence procedure to each household-electric-appliances device in the correspondence table in customer DB43a. When the direct communication by TCP/IP is possible, the information [IPv4, IPv6] which shows the version of TCP/IP is held as access, and when polling processing is required, the information which shows that, and the information [every 30 seconds] which shows spacing of [polling from a device] and polling are held.

[0118] Moreover, when the communication link by TCP/IP is possible, an IP address (for example, IP address of TV equipment 12 [X]) is held as the address, but the ECHONET address is held when polling processing is required. In addition, although the ECHONET address of a household-electric-appliances device is unknown before polling, when there is polling, the ECHONET address defined in the payload of the TCP/IP packet of the polling concerned is extracted, and it is stored as the address.

[0119] Moreover, the access approach to home gateway equipment and router equipment which perform junction of the above-mentioned polling etc., and the information about that address or a name may also be indicated by this customer DB. Of course, this home gateway equipment itself has household electric appliances ID, and these

may register with Customer DB.

[0120] (Actuation)

(1) supply of the program over a household-electric-appliances device -- the actuation at the time of applying for offer of service to household-electric-appliances server equipment 40 in the household-electric-appliances control system constituted as mentioned above For example, although processing (S31-S36) until a user operates TV equipment 12, applies for offer of service and transmits an Acknowledgement to the Acknowledgement from the household-electric-appliances server equipment 40 to this is the same as that even of S1-S6 in above-mentioned drawing 4 as shown in drawing 12 Next processings differ.

[0121] HTTPd42a which received the Acknowledgement from TV equipment 12 checks customer DB43a shown in above-mentioned drawing 11 , and acquires the access approach for the air conditioner 22 which is the candidate for offer of service. Thereby, HTTPd42a gets to know that polling processing needs the communication link to an air conditioner 22, it generates the message (powering-on directions) which directs the injection of the power source of the air conditioner 22 concerned, and the connection to a network 80 to a user so that it may make the polling from the air conditioner 22 concerned start, and it transmits to TV equipment 12 (S37). TV equipment 12 will display on a display 125 the image which directs the injection of the power source of an air conditioner 22 etc. to a user, if such powering-on directions are received (S38).

[0122] This image will be urged to the connection to powering on and the network 80 of an air conditioner 22 at a user, if the contents "turn on the electric power switch of an air conditioner and change into the condition that network connection (Internet connectivity) is made (also switch on the power source of a gateway unit if)" are shown and such an image is displayed on the display 125 of TV equipment 12.

[0123] A user switches on the power source of an air conditioner 22 according to this, and if he is required, he will connect an air conditioner 22 to a network 80 (S39).

[0124] According to this, the power source of an air conditioner 22 starts (S40), and a setup of ECHONET of the air conditioner 22 concerned is initialized, for example, the ECHONET address is determined (S41).

[0125] Then, an air conditioner 22 searches the nodes (other household-electric-appliances devices etc.) which have a "network junction function" from on a network 80. The demand of the notice of an attribute is specifically advanced in order to the nodes (other household-electric-appliances devices etc.) connected to the network 80, and a node (in this case, gateway unit 89) with a "network junction function" is detected. Then, the notice of that attribute is required from the detected node 89, i.e., the gateway unit, (S42), and the response (notice of an attribute) to this is supplied to an air conditioner 22 (S43). If a gateway unit 89 gets to know having the junction function (network junction function) to a network 30 by this, the ECHONET packet which requires that an air conditioner 22 should relay the message of above-mentioned polling to household-electric-appliances server equipment 40 will be transmitted to a gateway unit 89 (S44). This packet is relayed by the gateway unit 89 and transmitted to household-electric-appliances server equipment 40 as a TCP/IP packet (for example, HTTP packet to HTTPd42a) (S45).

[0126] Specifically as a TCP/IP packet of this polling, the packet of the POST method specified, for example in the protocol of HTTP is used. In this packet, MIME types, such as a predetermined mold, for example, "X-echonet-gateway" etc., are specified as a message of addressing to household-electric-appliances server equipment 40 which transmits. The household-electric-appliances server equipment 40 which received such a packet by this can know that the packet concerned is a command from the ECHONET node (in this case, gateway unit 89). Moreover, in the message, the value of the household electric appliances ID of the household-electric-appliances device of a transmitting agency is included, and household-electric-appliances server equipment 40 can know now the information about the thing from which household-electric-appliances device (node with household electric appliances ID) the packet of the polling which received is.

[0127] According to the above polling, HTTPd42a performs processing of processing of authentication of an air conditioner 22, exchange of a key, etc., supply of the program which receives remote control to an air conditioner 22, etc. like S7-S8 in above-mentioned drawing 4 (S46-S50). Under the present circumstances, conversion of a protocol is performed by the gateway unit 89 and junction of a packet is performed (S47, S50).

[0128] The program which realizes by this actuation whose air conditioner 22 receives remote control will be stored in the memory with which the control section 225 of an air conditioner 22 is equipped, and will be in a

running state (S51).

[0129] It is in this condition, for example, if the command of remote control is supplied to air-conditioner 22 from household-electric-appliances server equipment 40, an air conditioner 22 will be in the condition that actuation can be controlled according to the command concerned.

[0130] If offer of a program is successful, DB engine 42b will change from "no" the information in customer DB43a corresponding to the household-electric-appliances device which offered the program (remote-control propriety) into "it is good."

[0131] (2) Use of service (remote control)

As mentioned above, if the program for receiving the remote-control service from household-electric-appliances server equipment 40 will be in a running state, an air conditioner 22 will be in the condition of supervising the input of household-electric-appliances server equipment 40 to a directive command other than the directions input from the input section 222.

[0132] Although a user can use remote-control service even if he uses any of a terminal unit 50 or personal digital assistant equipment 70, he explains the case where personal digital assistant equipment 70 is used, by the following explanation.

[0133] In this household-electric-appliances control system, as shown, for example in drawing 13 , processing to transmission (S64) of the Request to Send (S61) of a household-electric-appliances control page to authentication and key exchange of personal digital assistant equipment 70 (S60), and HTTPd42a, offer (S62) of a household-electric-appliances control page, a directions input (S63), and a setting demand as well as processings from S11 to S15 in above-mentioned drawing 5 is performed.

[0134] Then, DB engine 42b acquires the information on the access approach (access in drawing 11) from the correspondence table in customer DB43a to the air conditioner 22 of the user concerned, the address, etc.

[0135] In this case, since polling processing is required for the communication link to an air conditioner 22, it stands by until protocol conversion of the polling packet (S65) from an air conditioner 22 is carried out (S66) and HTTPd42a is offered (S66). If a polling packet is supplied, HTTPd42a will transmit the temperature setting demand addressed to air-conditioner 22 to a gateway unit 89 as a response to this packet (S68). This temperature setting demand is relayed by the gateway unit 89 (S69), and is supplied to an air conditioner 22 (S70).

[0136] The control section 225 of an air conditioner 22 changes laying temperature according to the temperature setting demand supplied from household-electric-appliances server equipment 40 (S71).

[0137] (Effectiveness) In this household-electric-appliances control system, as mentioned above, when performing remote control from household-electric-appliances server equipment 40 to an air conditioner 22, it waits for the polling (it is 1 time to 30 seconds) to household-electric-appliances server equipment 40 from an air conditioner 22, and the command of remote control is transmitted as a response to this polling.

[0138] Thereby, in this household-electric-appliances control system, since it cannot communicate with the protocol used in the network of the exteriors, such as the Internet, service of remote control etc. can be offered from a household-electric-appliances server equipment side also to the household-electric-appliances device which cannot start a communication link.

[0139] Moreover, in this household-electric-appliances control system, since control command in the period of the polling to household-electric-appliances server equipment 40 can be published from a household-electric-appliances device at the latest, it can contribute to improvement in responsibility easily by setting up a polling period suitably.

[0140] In case the network in the 3rd operation ***** and the network of the exteriors, such as the Internet, are connected, in order to raise security, the firewall (F/W) which restricts access between these networks may be prepared.

[0141] Moreover, the router equipment for connecting with an external network using a local address in the network in ** may be equipped with the address translation sections, such as NAT (Network Address Translation: network address translation) or an IP masquarade. Moreover, also when the versions of the IP address of the network in ** and an external network differ, the address translation section is needed.

[0142] When these F/W, the address translation section, etc. are made to intervene, though the communications protocol (for example, TCP/IP) common to household-electric-appliances server equipment 40 and a household-

electric-appliances device is mounted, if it remains as it is, the communication link between these may be unable to be directly performed like the 1st above-mentioned operation gestalt.

[0143] (Configuration) In the household-electric-appliances control system concerning the 3rd operation gestalt of this invention, as shown, for example in drawing 14 , it has the network 90 instead of the network 20 in above-mentioned drawing 1 . In this network 90, it communicates with a TCP/IP protocol like the above-mentioned network 20. For this reason, the IP address is respectively assigned to the household-electric-appliances device connected to the network 90.

[0144] In this household-electric-appliances control system, router equipment 99 is formed instead of the router equipment 29 in above-mentioned drawing 1 . This router equipment 99 is equipped with communication link I/F991 which performs the communication link with a network 30, above-mentioned communication link I/F221 and radio I/F992 which performs radio, and the routing control section 993 which performs processing of path control, the address translation in the case of being required, etc.

[0145] This routing control section 993 performs conversion with the address system (for example, a global address, IPv4 grade) used in the external network 30, and the address systems (for example, a private address, IPv6, etc.) used in the internal network 90, and relays a packet.

[0146] If conversion of the address in the routing control section 993 is conversion of a global address and a private address, specifically, processing of above-mentioned NAT or an IP masquarade will perform it. Or the processing which also performs correspondence-related conversion, such as a protocol of a high order, for example, a port number etc., further rather than a network address may perform address translation.

[0147] Application gateway functions, such as PROXY, can also be prepared in the routing control section 993 with the address translation instead of address translation.

[0148] In addition, there is no need of not necessarily preparing the function of address translation, such as NAT, the function of an application gateway, etc. in router equipment 99, and it may be prepared in a network 30 side. Moreover, two or more these functions can also be prepared between a household-electric-appliances device and household-electric-appliances server equipment 40.

[0149] By the way, direct access between a network 30 and a network 90 is restricted by above-mentioned address translation or an above-mentioned application gateway etc. Therefore, in this household-electric-appliances control system, like the 2nd above-mentioned operation gestalt, household-electric-appliances server equipment 40 cannot specify directly the IP address of the air-conditioner 22 grade connected to the network 90, and cannot start a communication link.

[0150] For this reason, in this household-electric-appliances control system, the household-electric-appliances device which can receive remote control polls to household-electric-appliances server equipment 40 like the 2nd above-mentioned operation gestalt with a predetermined time interval.

[0151] In the packet (polling packet) for this, as that format is shown, for example in drawing 15 , address"Z" of household-electric-appliances server equipment 40 is specified as the destination address in a header, and the predetermined protocol (for example, "HTTP" which shows HTTPd42a) is specified as a destination port number. Moreover, in the payload of this packet, the predetermined instruction (POST instruction) etc. is defined like above-mentioned drawing 8 .

[0152] Moreover, in order to realize offer of the service under the environment where a household-electric-appliances device with the need of performing the above polling processing, and the household-electric-appliances device which can perform direct communication are intermingled, household-electric-appliances server equipment 40 For example, as shown in drawing 16 , the information which shows whether the direct communication by TCP/IP is possible or there is any need for polling processing is held as access which shows the correspondence procedure to each household-electric-appliances device in the correspondence table in customer DB43a. When the direct communication by TCP/IP is possible, the information [IPv4, IPv6] which shows the version of TCP/IP is held as access, and when polling processing is required, the information which shows that, and the information [every 30 seconds] which shows spacing of [polling from a device] and polling are held.

[0153] Moreover, when the communication link by TCP/IP is possible, an IP address (for example, IP address of TV equipment 12 [X]) is held as the address, but when polling processing is required, since the direct attainment of the packet cannot be carried out, the information [attainment is impossible] which shows things is held.

[0154] Moreover, the access approach to the router equipment which performs junction of the above-mentioned polling etc., and the information about that address or a name may also be indicated by this customer DB. Of course, this router equipment itself has household electric appliances ID, and these may register with Customer DB.

[0155] (Actuation)

(1) supply of the program over a household-electric-appliances device -- the actuation at the time of applying for offer of service to household-electric-appliances server equipment 40 in the household-electric-appliances control system constituted as mentioned above For example, as shown in drawing 17 , a user operates TV equipment 12 and applies for offer of service. Although processing (S81-S90) until it transmits an Acknowledgement to the Acknowledgement from the household-electric-appliances server equipment 40 to this and a user switches on the power source of an air conditioner 22 further is the same as that even of S31-S40 in above-mentioned drawing 12 , next processings differ.

[0156] If the power source of an air conditioner 22 starts (S90), a setup of a network 90 will be initialized by radio I/F221, for example, as for the air conditioner 22 concerned, the private address of a proper will be determined as an air conditioner 22 in a network 90 (S91).

[0157] Then, an air conditioner 22 transmits the packet of above-mentioned polling to router equipment 99 (S92). Address translation etc. is performed by router equipment 99, this packet is relayed (S93), and it is transmitted to household-electric-appliances server equipment 40 (S94).

[0158] According to such polling, HTTPd42a performs processing of processing of authentication of an air conditioner 22, exchange of a key, etc., supply of the program which receives remote control to an air conditioner 22, etc. like S48-S50 in above-mentioned drawing 12 (S95-S100). Under the present circumstances, by router equipment 99, conversion of the address etc. is performed and junction of a packet is performed (S96, S99).

[0159] The program which realizes by this actuation whose air conditioner 22 receives remote control will be stored in the memory with which the control section 225 of an air conditioner 22 is equipped, and will be in a running state (S101).

[0160] It is in this condition, for example, if the command of remote control is supplied to air-conditioner 22 from household-electric-appliances server equipment 40, an air conditioner 22 will be in the condition that actuation can be controlled according to the command concerned.

[0161] If offer of a program is successful, DB engine 42b will change from "no" the information in customer DB43a corresponding to the household-electric-appliances device which offered the program (remote-control propriety) into "it is good."

[0162] (2) Use of service (remote control)

As mentioned above, if the program for receiving the remote-control service from household-electric-appliances server equipment 40 will be in a running state, an air conditioner 22 will be in the condition of supervising the input of household-electric-appliances server equipment 40 to a directive command other than the directions input from the input section 222.

[0163] In this household-electric-appliances control system, as shown, for example in drawing 18 , processing to transmission (S114) of the Request to Send (S111) of a household-electric-appliances control page to authentication and key exchange of personal digital assistant equipment 70 (S110), and HTTPd42a, offer (S112) of a household-electric-appliances control page, a directions input (S113), and a setting demand as well as processings from S60 to S64 in above-mentioned drawing 13 is performed.

[0164] Then, DB engine 42b acquires the information on the access approach (access in drawing 16) from the correspondence table in customer DB43a to the air conditioner 22 of the user concerned, the address, etc.

[0165] In this case, since polling processing is required for the communication link to an air conditioner 22, it stands by until the polling packet (S120) from an air conditioner 22 is carried out for address translation etc. by router equipment 99 (S121) and HTTPd42a is offered (S122). If a polling packet is supplied, HTTPd42a will transmit the temperature setting demand addressed to air-conditioner 22 to router equipment 99 as a response to this packet (S123). This temperature setting demand is relayed by router equipment 99 (S124), and is supplied to an air conditioner 22 (S125).

[0166] The control section 225 of an air conditioner 22 changes laying temperature according to the temperature

setting demand supplied from household-electric-appliances server equipment 40 (S126).

[0167] (Effectiveness) In this household-electric-appliances control system, as mentioned above, when performing remote control from household-electric-appliances server equipment 40 to an air conditioner 22, it waits for the polling (it is 1 time to 30 seconds) to household-electric-appliances server equipment 40 from an air conditioner 22, and the command of remote control is transmitted as a response to this polling.

[0168] Thereby, in this household-electric-appliances control system, service of remote control etc. can be offered from the network side of the exteriors, such as the Internet, also to the household-electric-appliances device which cannot start a communication link.

[0169] Moreover, in this household-electric-appliances control system, since control command in the period of the polling to household-electric-appliances server equipment can be published from a household-electric-appliances device at the latest, it can contribute to improvement in responsibility easily by setting up a polling period suitably.

[0170] In addition, in each above-mentioned operation gestalt, although the case where "identification information of a device proper" was used as household electric appliances ID was explained, bottom two or more mutually-independent identification information may exist in a world at coincidence. For example, they are the value of EUI64, the value of an IP address, the value of the telephone number, a serial number, etc. For this reason, as household electric appliances ID, it is also possible to define by "of what kind of attribute it is identification information" and the form "what No. of that identification information it is" so that it may be called "what No. of EUI64", and "what No. of the telephone number", for example.

[0171]

[Effect of the Invention] In this invention, the use demand of the service which includes the identification information of the 1st household-electric-appliances device concerned and the information which shows the household-electric-appliances device (2nd household-electric-appliances device) using service in the household-electric-appliances server equipment which offers service from the household-electric-appliances device (1st household-electric-appliances device) which requires use of service is transmitted. The household-electric-appliances server equipment which received such a use demand It checks whether the household-electric-appliances device corresponding to the information which shows the 2nd household-electric-appliances device which the owner corresponding to the identification information of the 1st household-electric-appliances device which received with reference to the identification information maintenance means received is owned. When owning is checked, the command which directs starting of the service use software beforehand built into addressing to a household-electric-appliances device of the 2nd by service use software or the household-electric-appliances device concerned is transmitted. The 2nd household-electric-appliances device which received such service use software or a command performs the service use software concerned according to the received service use software or the command, and receives offer of service from a household-electric-appliances server.

[0172] The service according to the household-electric-appliances device which the user owns can be offered by this, for example, the control program according to the installation environment of a household-electric-appliances device etc. can be offered. For this reason, the management from the remote place of the household-electric-appliances device by which installation environments differ is easily realizable.

[Translation done.]

* NOTICES *

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damages caused by the use of this translation.

1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

TECHNICAL FIELD

[Field of the Invention] This invention relates to the repeating installation which relays the communication link between a household-electric-appliances device, the household-electric-appliances server equipment which provides a household-electric-appliances device with service via a public network and household-electric-appliances equipment, and household-electric-appliances server equipment.

[Translation done.]

PRIOR ART

[Description of the Prior Art] In recent years, the household-electric-appliances device equipped with communication facility with other information processors etc. is developed. For example, IEEE1394 is known as a communications protocol between the so-called audiovisual equipments, such as a TV apparatus, image transcription equipment, and sound equipment. In this IEEE1394, the communication procedure between image audio equipments etc. is specified, and the actuation with which it cooperated between image audio equipments is attained.

[0003] Moreover, ECHONET (ECHONET) is known as a protocol which can be used, for example with the interface between power system household-electric-appliances devices (the so-called white-home-appliances device), such as an air conditioner, hot-water supply management equipment, a lighting system, a washing machine, a refrigerator, and a microwave oven. In this ECHONET, although communicated using wireless circuits, such as an electric wave and infrared radiation, what communicates using wire circuits, such as an others and electric light line, is standardized. Moreover, this ECHONET defines as an object the function which each device has, and unification of a control procedure is achieved in it. By using such ECHONET, the cooperation actuation between household-electric-appliances devices, a centralized control, etc. are possible.

[0004] Moreover, in these protocols, since direct communication cannot be carried out to networks, such as the Internet, if it remains as it is, the gateway unit which performs conversion with the TCP/IP protocol generally used in these networks is developed. By using such a gateway unit, two or more household-electric-appliances devices connected through the network can be controlled now from a remote place.

[0005] In order to absorb the difference in the environment for every user, or the difference in the demand for every user, the program which receives the management from a remote place is downloaded via a network to the above household-electric-appliances devices, or the program which receives the management from a remote place is beforehand stored in the household-electric-appliances device, and to consider as the operating state which accepts the management from a remote place via a network is desired.

[Translation done.]

* NOTICES *

EFFECT OF THE INVENTION

(Effectiveness) As explained above, the household-electric-appliances device connected to the network in ** from the terminal unit of remote places, such as personal digital assistant equipment, is easily controllable by the household-electric-appliances control system of this 1st operation gestalt. Therefore, even if it is the household-electric-appliances device by which installation environments differ, the management from a remote place is easily realizable.

[0088] (Modification) The command uniquely specified also by the standardized command which is not restrained, for example, is defined by HTTP etc. is sufficient as especially the protocol used in the communication link between the personal digital assistant equipment 70 under processing shown in the communication link between the TV equipment 12 under processing shown in still more nearly above-mentioned drawing 4 , and household-electric-appliances server equipment 40, or above-mentioned drawing 5 , and household-electric-appliances server equipment 40.

[0089] When using HTTP, even if it is the case where equipments, such as a fire wall and a proxy, are arranged between household-electric-appliances server equipment 40, the communication link between household-electric-appliances server equipment 40 can be easily enabled by changing a setup of these equipments suitably.

[0090] In the 2nd operation gestalt above-mentioned household-electric-appliances control system of the 1st operation gestalt, the TCP/IP protocol is respectively mounted in the household-electric-appliances device connected to the 2nd network 20 of an air conditioner 22 and hot-water supply management equipment 23 grade, and the IP address was respectively assigned to each household-electric-appliances devices 22 and 23.

[0091] However, it can also constitute from ECHONET so that it may connect with a network 30 through the gateway unit which changes the protocol of ECHONET, and protocols, such as TCP/IP, into it since it is not necessary to necessarily mount protocols, such as TCP/IP, in each device.

[0092] (Configuration) In the household-electric-appliances control system concerning the 2nd operation gestalt of this invention, as shown, for example in drawing 6 , it has the network 80 instead of the network 20 in above-mentioned drawing 1 . In this network 80, it differs in the above-mentioned network 20, and communicates with the original protocol of ECHONET.

[0093] Unlike the 1st above-mentioned operation gestalt, the IP address is not assigned to the air conditioner 22 and the hot-water supply management equipment 23 which are connected to this network 80. In addition, household electric appliances ID are assigned to each devices 22, 23, and 89 as a value of a proper like the 1st above-mentioned operation gestalt.

[0094] For this reason, in this network 80, it has the gateway unit 89 which changes the protocol (ECHONET) used in the network 80 instead of above-mentioned router equipment 29, and the protocol (TCP/IP) used in the network 30.

[0095] This gateway unit 89 is equipped with communication link I/F891 for connecting with a network 30, ECHONET I/F892 for connecting with an air conditioner 22 and hot-water supply management equipment 23 grade through the wireless circuit 21 which constitutes a network 80, and the protocol conversion section 893 that performs protocol conversion. This gateway unit relays the message of addressing containing the household electric appliances ID from for example, a household-electric-appliances device etc. to household-electric-appliances server equipment 40 etc. between a network 80 and a network 30. Solution of a DNS name and

protocol conversion for message junction are carried out, and, specifically, the communication link between household-electric-appliances server equipment 40 and the household-electric-appliances device of air-conditioner 22 grade is relayed.

[0096] In ECHONET used in the network 80, data are transmitted and received in a packet (ECHONET packet) unit as shown in drawing 7 . This ECHONET packet consists of a part for a header unit (ECHONET header), and a payload part (ECHONET data).

[0097] The information (destination ECHONET address) for identifying the device of a transmission place, the information (source echo network address) for identifying the device of a transmitting agency, etc. are stored in the ECHONET header. Each address is expressed with the ECHONET address assigned for every device in ECHONET.

[0098] Moreover, the destination URI (Unified Resource Identifier) of the message which I have transmitted to household-electric-appliances server equipment 40 by the information (transmitting agency object) which shows the object in the device of a transmitting agency, the information (transmission place object) which shows the object in the device of a transmission place, the property, service, and the gateway unit 89, the transfer parameter of a body, etc. are stored in the ECHONET data.

[0099] In ECHONET, a communications partner is specified by the ECHONET address assigned to each device and the object which shows the function in each device. For example, in the air conditioner 22, objects which acquire a room temperature, for example, such as acquisition/modification of an object and laying temperature, are specified. The junction object which receives the demand of junction to a network 30 is prescribed by the gateway unit 89. The junction object which requires junction is prescribed to the junction object of a gateway unit 89 by the household-electric-appliances device with the need of requiring the junction addressed to network 30 from this gateway unit 89.

[0100] In addition, as for this drawing 7 , the IP address shows the example of the ECHONET packet which transmits to addressing to a junction object of a gateway unit 89 to transmit the below-mentioned polling demand to addressing to URI whose directory name is "/kaden" by "Z" (household-electric-appliances server equipment 40).

[0101] Moreover, the TCP/IP packet used in the network 30 consists of a header and a payload, as shown in drawing 8 .

[0102] The IP address (destination IP address) of the device of a transmission place, the IP address (source IP address) of the device of a transmitting agency, the port number of a transmission place, etc. are stored in the header. Moreover, the message of addressing to HTTPd42a for example, is stored in a payload.

[0103] In addition, this drawing 8 shows the example of the packet which a gateway unit 89 transmits to household-electric-appliances server equipment 40 according to the ECHONET packet (packet of polling) shown in above-mentioned drawing 7 .

[0104] - the junction of a packet -- in order to perform conversion with the above ECHONET packets and a TCP/IP packet, the protocol conversion section 893 of a gateway unit 89 is equipped with the TCP/IP packet transceiver section 301 which transmits and receives a TCP/IP packet, the ECHONET packet transceiver section 302 which performs transmission and reception of the ECHONET packet, and the packet transducer 303 which performs conversion of a packet as shown in drawing 9 . This ECHONET packet transceiver section 302 or the packet transducer 303 is equivalent to an above-mentioned junction object.

[0105] In this household-electric-appliances control system, the communication link to the household-electric-appliances device connected to the network 20 is performed like the 1st above-mentioned operation gestalt according to the HTTP protocol which is a higher-level protocol on a TCP/IP protocol from household-electric-appliances server equipment 40.

[0106] For this reason, the correspondence table attaching part 310 holding a table for the packet transducer 303 to perform conversion of a HTTP packet and the ECHONET packet, The status line header extract section 311 which extracts a status line header from the header of the HTTP packet from the household-electric-appliances server equipment 40 supplied from the TCP/IP packet transceiver section 301, The transfer electrical-parameter-extraction section 312 which extracts a transfer parameter from the payload of a HTTP packet, It has the transfer parameter insertion section 313 which inserts a transfer parameter in the ECHONET packet, and the echo packet

formation section 314 which forms an echo packet and is supplied to the ECHONET packet transceiver section 302.

[0107] Moreover, this packet transducer 303 is equipped with the URI extract section 321 which extracts the destination URI from above-mentioned echo packet data, the transfer electrical-parameter-extraction section 322 which extracts a transfer parameter from echo packet data, the transfer parameter insertion section 323 which inserts a transfer parameter in a HTTP packet, and the HTTP packet formation section 324 which forms the HTTP packet addressed to household-electric-appliances server equipment 40.

[0108] As shown in drawing 1010 , the correspondence table for conversion of a HTTP packet and the ECHONET packet is stored in the correspondence table attaching part 310.

[0109] The correspondence table showing the correspondence relation between the command by the above-mentioned ECHONET packet and the command (for example, the HTTP command to HTTPd42a) by the HTTP packet is held at the correspondence table attaching part 310. By referring to this correspondence table, the correspondence relation between the commands and the HTTP commands by the ECHONET packet can be known.

[0110] Specifically, the ECHONET address (for example, ECHONET address of an air conditioner 22 [E1]) of the household-electric-appliances device which performs the destination URI (for example, directory of HTTPd42a of an IP address [Z] and the address concerned [/kaden]) in the ECHONET data, URI, and a communication link concerned is matched and stored in this correspondence table.

[0111] In this household-electric-appliances control system, the protocol conversion between a network 80 and a network 30 is possible by the gateway unit 89 of such a configuration. 1 to 1 (end to end) can be communicated now between the application levels currently performed by this by the household-electric-appliances device connected with household-electric-appliances server equipment 40 in the network 80. In addition, a code may be applied to this communication link in the form of end to end in this case. It becomes possible to communicate arbitration between household-electric-appliances server equipment and a household-electric-appliances device, without being known by the gateway unit by doing in this way.

[0112] - It is at polling and the time and conversion of a network 80 and the packet between network 30 is attained as mentioned above. Thereby, from the air conditioner 22 connected to the network 80, and hot-water supply management equipment 23, URI of household-electric-appliances server equipment 40 is specified, and a communication link can be started now. However, from the household-electric-appliances server equipment 40 side, the household-electric-appliances device of air-conditioner 22 grade connected through the gateway unit 89 cannot be specified directly, and a communication link cannot be started. Because, a household-electric-appliances device is because it is not set up so that the communication link by IP can be performed between direct household-electric-appliances server equipment.

[0113] For this reason, in this household-electric-appliances control system, transmission is started to household-electric-appliances server equipment 40 for every predetermined time interval from the household-electric-appliances device side which receives offer of remote-control service. The send action for such every predetermined spacing is called polling. If there is a response from the household-electric-appliances server equipment 40 to polling, the reception concerned will be received, but the household-electric-appliances device which polled stands by till the time of day which should carry out the next polling, when there is no response into predetermined time (when the control command from a household-electric-appliances server etc. is not carried in the packet which is answerback of this polling etc.).

[0114] if household-electric-appliances server equipment 40 does not have the need for transmission over a household-electric-appliances device -- polling -- ignoring (null -- you answering) -- if there is the need for transmission over the household-electric-appliances device concerned, transmission will be started as a response to polling.

[0115] In this household-electric-appliances control system, such polling processing has realized initiation of the communication link from the household-electric-appliances server equipment 40 side substantially.

[0116] In addition, about this polling period, the default is defined and modification may be possible by control from household-electric-appliances server equipment about this value at any value.

[0117] - Customer's DB configuration and household-electric-appliances server equipment 40 In order to realize

offer of the service under the environment where a household-electric-appliances device with the need of performing such polling processing, and the household-electric-appliances device which can perform direct communication with a TCP/IP protocol are intermingled For example, as shown in drawing 11 R> 1, the information which shows whether the direct communication by TCP/IP is possible or there is any need for polling processing is held as access which shows the correspondence procedure to each household-electric-appliances device in the correspondence table in customer DB43a. When the direct communication by TCP/IP is possible, the information [IPv4, IPv6] which shows the version of TCP/IP is held as access, and when polling processing is required, the information which shows that, and the information [every 30 seconds] which shows spacing of [polling from a device] and polling are held.

[0118] Moreover, when the communication link by TCP/IP is possible, an IP address (for example, IP address of TV equipment 12 [X]) is held as the address, but the ECHONET address is held when polling processing is required. In addition, although the ECHONET address of a household-electric-appliances device is unknown before polling, when there is polling, the ECHONET address defined in the payload of the TCP/IP packet of the polling concerned is extracted, and it is stored as the address.

[0119] Moreover, the access approach to home gateway equipment and router equipment which perform junction of the above-mentioned polling etc., and the information about that address or a name may also be indicated by this customer DB. Of course, this home gateway equipment itself has household electric appliances ID, and these may register with Customer DB.

[0120] (Actuation)
(1) supply of the program over a household-electric-appliances device — the actuation at the time of applying for offer of service to household-electric-appliances server equipment 40 in the household-electric-appliances control system constituted as mentioned above For example, although processing (S31-S36) until a user operates TV equipment 12, applies for offer of service and transmits an Acknowledgement to the Acknowledgement from the household-electric-appliances server equipment 40 to this is the same as that even of S1-S6 in above-mentioned drawing 4 as shown in drawing 12 Next processings differ.

[0121] HTTPd42a which received the Acknowledgement from TV equipment 12 checks customer DB43a shown in above-mentioned drawing 11 , and acquires the access approach for the air conditioner 22 which is the candidate for offer of service. Thereby, HTTPd42a gets to know that polling processing needs the communication link to an air conditioner 22, it generates the message (powering-on directions) which directs the injection of the power source of the air conditioner 22 concerned, and the connection to a network 80 to a user so that it may make the polling from the air conditioner 22 concerned start, and it transmits to TV equipment 12 (S37). TV equipment 12 will display on a display 125 the image which directs the injection of the power source of an air conditioner 22 etc. to a user, if such powering-on directions are received (S38).

[0122] This image will be urged to the connection to powering on and the network 80 of an air conditioner 22 at a user, if the contents "turn on the electric power switch of an air conditioner and change into the condition that network connection (Internet connectivity) is made (also switch on the power source of a gateway unit if)" are shown and such an image is displayed on the display 125 of TV equipment 12.

[0123] A user switches on the power source of an air conditioner 22 according to this, and if he is required, he will connect an air conditioner 22 to a network 80 (S39).

[0124] According to this, the power source of an air conditioner 22 starts (S40), and a setup of ECHONET of the air conditioner 22 concerned is initialized, for example, the ECHONET address is determined (S41).

[0125] Then, an air conditioner 22 searches the nodes (other household-electric-appliances devices etc.) which have a "network junction function" from on a network 80. The demand of the notice of an attribute is specifically advanced in order to the nodes (other household-electric-appliances devices etc.) connected to the network 80, and a node (in this case, gateway unit 89) with a "network junction function" is detected. Then, the notice of that attribute is required from the detected node 89, i.e., the gateway unit, (S42), and the response (notice of an attribute) to this is supplied to an air conditioner 22 (S43). If a gateway unit 89 gets to know having the junction function (network junction function) to a network 30 by this, the ECHONET packet which requires that an air conditioner 22 should relay the message of above-mentioned polling to household-electric-appliances server equipment 40 will be transmitted to a gateway unit 89 (S44). This packet is relayed by the gateway unit 89 and

transmitted to household-electric-appliances server equipment 40 as a TCP/IP packet (for example, HTTP packet to HTTPd42a) (S45).

[0126] Specifically as a TCP/IP packet of this polling, the packet of the POST method specified, for example in the protocol of HTTP is used. In this packet, MIME types, such as a predetermined mold, for example, "X-echonet-gateway" etc., are specified as a message of addressing to household-electric-appliances server equipment 40 which transmits. The household-electric-appliances server equipment 40 which received such a packet by this can know that the packet concerned is a command from the ECHONET node (in this case, gateway unit 89). Moreover, in the message, the value of the household electric appliances ID of the household-electric-appliances device of a transmitting agency is included, and household-electric-appliances server equipment 40 can know now the information about the thing from which household-electric-appliances device (node with household electric appliances ID) the packet of the polling which received is.

[0127] According to the above polling, HTTPd42a performs processing of processing of authentication of an air conditioner 22, exchange of a key, etc., supply of the program which receives remote control to an air conditioner 22, etc. like S7-S8 in above-mentioned drawing 4 (S46-S50). Under the present circumstances, conversion of a protocol is performed by the gateway unit 89 and junction of a packet is performed (S47, S50).

[0128] The program which realizes by this actuation whose air conditioner 22 receives remote control will be stored in the memory with which the control section 225 of an air conditioner 22 is equipped, and will be in a running state (S51).

[0129] It is in this condition, for example, if the command of remote control is supplied to air-conditioner 22 from household-electric-appliances server equipment 40, an air conditioner 22 will be in the condition that actuation can be controlled according to the command concerned.

[0130] If offer of a program is successful, DB engine 42b will change from "no" the information in customer DB43a corresponding to the household-electric-appliances device which offered the program (remote-control propriety) into "it is good."

[0131] (2) Use of service (remote control)
As mentioned above, if the program for receiving the remote-control service from household-electric-appliances server equipment 40 will be in a running state, an air conditioner 22 will be in the condition of supervising the input of household-electric-appliances server equipment 40 to a directive command other than the directions input from the input section 222.

[0132] Although a user can use remote-control service even if he uses any of a terminal unit 50 or personal digital assistant equipment 70, he explains the case where personal digital assistant equipment 70 is used, by the following explanation.

[0133] In this household-electric-appliances control system, as shown, for example in drawing 13 , processing to transmission (S64) of the Request to Send (S61) of a household-electric-appliances control page to authentication and key exchange of personal digital assistant equipment 70 (S60), and HTTPd42a, offer (S62) of a household-electric-appliances control page, a directions input (S63), and a setting demand as well as processings from S11 to S15 in above-mentioned drawing 5 is performed.

[0134] Then, DB engine 42b acquires the information on the access approach (access in drawing 11) from the correspondence table in customer DB43a to the air conditioner 22 of the user concerned, the address, etc.

[0135] In this case, since polling processing is required for the communication link to an air conditioner 22, it stands by until protocol conversion of the polling packet (S65) from an air conditioner 22 is carried out (S66) and HTTPd42a is offered (S66). If a polling packet is supplied, HTTPd42a will transmit the temperature setting demand addressed to air-conditioner 22 to a gateway unit 89 as a response to this packet (S68). This temperature setting demand is relayed by the gateway unit 89 (S69), and is supplied to an air conditioner 22 (S70).

[0136] The control section 225 of an air conditioner 22 changes laying temperature according to the temperature setting demand supplied from household-electric-appliances server equipment 40 (S71).

[Translation done.]

* NOTICES *

TECHNICAL PROBLEM

[Problem(s) to be Solved by the Invention] However, since the communications protocol unified by all household-electric-appliances devices as mentioned above is not established, the communications protocol which can be used by the household-electric-appliances device varies with the environment where the household-electric-appliances device concerned is installed.
[0007] Moreover, it was difficult from viewpoints, such as constraint of cost, to mount the program corresponding to all communications protocols in each household-electric-appliances device beforehand so that it could respond to all installation environments.
[0008] This invention is made in view of an above-mentioned technical problem, and aims at offering the household-electric-appliances device which can realize easily management from the remote place of the household-electric-appliances device by which installation environments differ, household-electric-appliances server equipment, a gateway unit, and a household-electric-appliances control system.

[Translation done.]

* NOTICES *

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1.This document has been translated by computer. So the translation may not reflect the original precisely.
2.**** shows the word which can not be translated.
3.In the drawings, any words are not translated.

MEANS

[Means for Solving the Problem] In order to solve an above-mentioned problem, the household-electric-appliances device concerning claim 1 of this invention It is the household-electric-appliances device which applies for use of service to the household-electric-appliances server equipment which offers service through a public network. An identification information maintenance means to hold the identification information of the proper beforehand assigned so that it might belong to two or more categories and there might be no duplication between household-electric-appliances server equipment and the household-electric-appliances device which can perform a communication link, The means of communications which performs a communication link with household-electric-appliances server equipment through an in-house network or a public network, The identification information of the same owner's household-electric-appliances device It holds for every owner and is characterized by having a service request means to transmit the offer demand of service to the household-electric-appliances device (2nd household-electric-appliances device) of the identification information of the household-electric-appliances device (1st household-electric-appliances device) concerned, and the owner of the household-electric-appliances device concerned to the household-electric-appliances server equipment which manages offer of service for every owner.

[0010] Moreover, the household-electric-appliances device concerning claim 4 of this invention is a household-electric-appliances device using the service offered from the household-electric-appliances server equipment which offers service through a public network. An identification information maintenance means to hold the identification information of the proper beforehand assigned so that it might belong to two or more categories and there might be no duplication between household-electric-appliances server equipment and the household-electric-appliances device which can perform a communication link, The means of communications which performs a communication link with household-electric-appliances server equipment through an in-house network or a public network, The identification information of the same owner's household-electric-appliances device It holds for every owner. Offer of service to every owner The household-electric-appliances server equipment to manage a service request Starting of the service use software beforehand built into the service use software transmitted according to the offer demand of service to the identification information of the household-electric-appliances device which the household-electric-appliances device (1st household-electric-appliances device) to transmit transmitted, and the household-electric-appliances device (2nd household-electric-appliances device) concerned, or the household-electric-appliances device concerned It is characterized by having a receiving means to receive the command to direct through means of communications, and a service use means to perform the service use software concerned according to the service use software or the command which received, and to receive offer of the service from a household-electric-appliances server.

[0011] A household-electric-appliances device means the electronic equipment used at a home etc., for example, the so-called audiovisual equipments, such as a TV apparatus besides power system household-electric-appliances device ******* white-home-appliances devices, such as an air conditioner, hot-water supply management equipment, a lighting system, a washing machine, a refrigerator, and a microwave oven, image transcription equipment, and sound equipment, are contained.

[0012] Moreover, the household-electric-appliances server equipment concerning claim 12 of this invention It is household-electric-appliances server equipment which offers the service to a household-electric-appliances

device through a public network. An identification information maintenance means to hold the identification information of the proper beforehand assigned so that there might be no duplication between the household-electric-appliances devices which belong to two or more categories and can perform household-electric-appliances server equipment and a communication link concerned for every owner, The identification information concerned of the 1st household-electric-appliances device transmitted from the household-electric-appliances device (1st household-electric-appliances device) which requires use of service, A receiving means to receive the use demand of service including the information which shows the household-electric-appliances device (2nd household-electric-appliances device) using service, A check means to check whether the household-electric-appliances device corresponding to the information which shows the 2nd household-electric-appliances device which the owner corresponding to the identification information of the 1st household-electric-appliances device which received received is owned with reference to an identification information maintenance means, When it is checked that the owner corresponding to the use demand of service in a check means owns the 2nd household-electric-appliances device, starting of the service use software beforehand built into addressing to a household-electric-appliances device of the 2nd by service use software or the household-electric-appliances device concerned It is characterized by having a transmitting means to transmit the command to direct.

[0013] Moreover, the repeating installation concerning claim 22 of this invention They are the in-house network to which the household-electric-appliances device using the service which the household-electric-appliances server equipment connected via the public network offers was connected, and the repeating installation installed between said household-electric-appliances server equipment. The effective address (local address) is assigned to the household-electric-appliances device only within the in-house network. A receiving means to receive the junction demand which has the information which shows the address or the address of household-electric-appliances server equipment received from household-electric-appliances equipment through the in-house network, It is characterized by having a transmitting means to perform transmission to household-electric-appliances server equipment through a public network, according to the information which shows the address or the address of household-electric-appliances server equipment under junction demand which received.

[0014]

[Embodiment of the Invention] This invention is applicable to the household-electric-appliances control system which manages for example, a household-electric-appliances device collectively.

[0015] The household-electric-appliances control system concerning the 1st operation gestalt which applied the 1st operation gestalt (configuration) this invention For example, the 1st 10 and the private network of the 2nd network 20 grade which were installed in the building 1 as shown in drawing 1 , The household-electric-appliances server equipment 40 and the terminal unit 50 which were connected through these networks 10 and 20 and the 3rd network (public networks, such as the Internet) 30 of the building 1 exterior, It has personal digital assistant equipment 70 connected to a network 30 through a base station 65 and a gateway unit 60.

[0016] The 1st network 10 is a network where the household-electric-appliances device of for example, an acoustic-imaging (AV:Audio Visual) system is connected, for example, consists of a cable network using protocols, such as IEEE1394, as the physical layer. This network 10 is equipped with the image transcription equipment 13 which performs record/playback of image information using record media, such as the television receiver (TV equipment) 12 connected through the wire circuit 11, a magnetic tape, a magnetic disk, and an optical disk, the sound equipment 14 which performs record/playback of speech information, such as music, using record media, such as a magnetic tape, a magnetic disk, an optical disk, and memory, and the router equipment 19 which perform protocol conversion of the physical layer of a wire circuit 11 and a network 30, path control, etc.

[0017] TV equipment 12 For example, communication link I/F121 which performs the communication link with a wire circuit 11, For example, the input section 122 which inputs the directions from a user through remote control, the switch formed in the body, The receive section 123 which receives broadcast of an image, data, etc., and the web browser 124 which acquires the contents offered by HTTPd42a, It has the display 125 which displays the image in which the demand of directions to the image or user whom the receive section received is shown, the control section 126 which controls actuation of the whole equipment, and the household-electric-appliances ID attaching part 129 which holds the household electric appliances ID of a proper for each device of every.

[0018] This TV equipment 12 can use now application service of the service offered by the service (for example,

contents distribution) offered by household-electric-appliances server equipment 40, or the household-electric-appliances server equipment 40 concerned.

[0019] Router equipment 19 is equipped with communication link I/F291 which performs the communication link with a network 30, communication link I/F292 which performs the communication link with a network 10, and the routing control section 193 which performs processing of path control etc.

[0020] Moreover, the 2nd network 20 is a network where the household-electric-appliances device ******** white-home-appliances device of for example, a power system is connected, for example, consists of a wireless network using the radio protocol as the physical layer. This network 20 is equipped with the router equipment 29 which performs path control of the air conditioner 22 connected through the wireless circuit 21, hot-water supply management equipment 23, a refrigerator 24, a microwave oven 25 (not shown [a part]), and the wireless circuit 21 and a network 30 etc. In addition, this network 20 is not restricted to this wireless network, for example, is good also as a cable network using the power line etc. as a channel etc.

[0021] An air conditioner 22 For example, radio I/F221 which performs the communication link with router equipment 29 through the wireless circuit 21, For example, the input section 222 which inputs the directions from a user through remote control, the switch formed in the body, For example, radio I/F223 which performs above-mentioned router equipment 29 and radio using infrared radiation, IEEE802.11, or Bluetooth (trademark), With the temperature sensor 224 which measures a room temperature, for example, the exterior unit control section 225 which controls the exterior unit which has a compressor, a heat exchange machine, etc., It has the control section 226 which controls actuation of exterior unit control-section 225 grade according to the directions supplied through household-electric-appliances server equipment 40, and the household-electric-appliances ID attaching part 229 which holds the household electric appliances ID of a proper for each device of every.

[0022] Hot-water supply management equipment 23 is equipped with router equipment 29, communication link I/F231 which performs a communication link, the display 232 which has the display screen, the input section 233 which inputs the directions from a user, and a display 232 and the control section 234 which controls input section 233 grade through the wireless circuit 21.

[0023] The refrigerator 24 is equipped with router equipment 29, communication link I/F241 which performs a communication link, the display 242 which has the display screen, the input section 243 which inputs the directions from a user, and a display 242 and the control section 244 which controls input section 243 grade through the wireless circuit 21.

[0024] The microwave oven 25 is equipped with router equipment 29, communication link I/F251 which performs a communication link, the display 252 which has the display screen, the input section 253 which inputs the directions from a user, and a display 252 and the control section 254 which controls input section 253 grade through the wireless circuit 21.

[0025] Router equipment 29 is equipped with communication link I/F291 which performs the communication link with a network 30, above-mentioned communication link I/F221 and radio I/F292 which performs radio, and the routing control section 293 which performs processing of path control etc.

[0026] A network 30 consists of a network using the optical fiber as transmission lines, such as a network or FTTH which used the metal cable as transmission lines, such as ISDN, CATV, ADSL, and an analog dedicated line, and performs the **** communication link for TCP/IP protocols in this network 30, for example. Or you may make it the above networks constitute the part outside a building 1 for the part in the building 1 of the networks 30 using the network of for example, IEEE802.3 grade.

[0027] Household-electric-appliances server equipment 40 consists of an information processor which has auxiliary storage units, such as MPU, memory, and HDD, and processing of control of actuation of the device connected to each above-mentioned networks 10 and 20 etc. is performed. this -- household electric appliances -- a server -- equipment -- 40 -- a communication interface (I/F) -- 41 -- a terminal unit -- 50 -- or -- a personal digital assistant -- equipment -- 70 -- from -- directions -- following -- each -- a network -- ten -- 20 -- connecting -- having -- **** -- a device -- control -- etc. -- service -- or -- being concerned -- service -- an application -- service -- etc. -- providing -- service provision -- the section -- 42 -- this -- service provision -- the section -- service -- offer -- a sake -- using -- data -- etc. -- holding -- a database -- (-- DB --) -- 43 -- having -- **** .

[0028] Communication link I/F41 performs communications control for using the service offered by the service provision section 42 by network 30 course etc.

[0029] the HTTP server (HTTPd) 42 which the service provision section 42 makes a front end the web browser which is functioning in TV equipment 12, a terminal unit 50, and 70 grades, and offers service -- it has DB engine 42b which controls access to a and DB43 etc. Moreover, DB43 is equipped with customer DB42a holding the information about each user (customer), and household-electric-appliances DB42b holding information, such as a function about each household-electric-appliances device.

[0030] In addition, although the router equipments 19 and 29 are respectively formed in the network 10 and the network 20 with the above-mentioned configuration, it is good also as a configuration which you may make it form only one router equipment which has communication link I/F corresponding to wire-circuit 11 and wireless circuit 21 each, or subdivides a network 10 or a network 20, and forms three or more router equipments.

[0031] Above-mentioned TV equipment 12, an air conditioner 22, and -- are the so-called "network household electric appliances" which mounted the TCP/IP protocol respectively. The IP address (global address) of the proper which does not have duplication to all the device respectively connected to a network 30 is assigned to these TV equipments 12, an air conditioner 22, and --. Although the version of this IP address may be IPv4 or may be IPv6, it is taken as the IP address of the same version with each household-electric-appliances devices 22 and 23 and the router equipment 29 which are connected to the network 20.

[0032] Moreover, in this household-electric-appliances control system, the identification information (household electric appliances ID) of at least one proper is respectively assigned to all the devices managed with household-electric-appliances server equipment 40. Even if the manufacturers of a device differ, these household electric appliances ID are managed so that there may be no duplication. At the time of manufacture, these household electric appliances ID are embedded at the household-electric-appliances ID attaching part 129,229, and are held so that it cannot change. Furthermore, by approaches, such as encryption, when required, it is held so that household electric appliances ID may not be known directly. Specifically, it can mount as registers in IC chip which constitutes control sections 126 and 226 etc.

[0033] As household electric appliances ID, the MAC (Media Access Control) address of an IP address (global address), Bluetooth-ID, and the EUI64 grade of IEEE1394 can also be used as it is. Since these addresses are managed so that there may be no duplication each whole device essentially, they can be contributed to reduction of the management burden of household electric appliances ID by diverting these as household electric appliances ID. In addition, even if it is the case where other addresses are diverted as household electric appliances ID in this way, these addresses and household electric appliances ID are managed as an independent value which has another semantics logically, and in order that household-electric-appliances server equipment 40 may identify each household-electric-appliances device, they are used.

[0034] In customer DB43a, for example, the information for identifying each user, as shown in drawing 2 (user name), The household electric appliances ID of all the household-electric-appliances devices that information (User Information) and the user concerned own about the user concerned (the household electric appliances ID of possession household electric appliances) The information (classification and part number) which shows the classification and the part number of the household-electric-appliances device concerned, the information which shows the correspondence procedure to the household-electric-appliances device concerned (access:, for example, IPv6, IPv4, etc.), The correspondence table which matches the information (remote-control propriety) which shows the propriety of the address (address) of the possession household-electric-appliances device concerned and remote control of the possession household-electric-appliances device concerned is stored.

[0035] In addition, you may be the value of the name (for example, DNS name) which may be the value of an IP address itself and is assigned to a household-electric-appliances device about the address of said household-electric-appliances device. To be a name, household-electric-appliances server equipment needs to do first the activity which changes the value of this name into an IP address.

[0036] A user name is good also as information which is sufficient for each user if it is the information on a proper, for example, is given to him for convenience on management of a customer number etc.

[0037] The information about a user consists of information which shows liking of the address of the user concerned, a name, age, an occupation, the telephone number, the provider (provider) of network connection

service, an e-mail address, and the user concerned etc., for example. Moreover, you may make it the description approach of the information about a user include all the family's devices by making information of the householder instead of one certain user into representation, and it may register the firm name as an owner about the household-electric-appliances device which a certain firm holds.

[0038] Moreover, the household electric appliances ID of possession household electric appliances are the household electric appliances ID currently held at the above-mentioned household-electric-appliances ID attaching parts 129 and 229. In case a user purchases a household-electric-appliances device, these household electric appliances ID are matched with the name of the user concerned etc., and are inputted into DB engine 42b. In case a user purchases a household-electric-appliances device, the form in which the address, a name, etc. are entered from a dealer etc. is offered, the salesclerk of a dealer etc. inputs the contents which the user filled in through the terminal unit connected to household-electric-appliances server equipment 40 by the network 30 course, and, specifically, the terminal unit concerned supplies the inputted information to DB engine 42b.

[0039] Or the application of use of services, such as remote operation which minded the household-electric-appliances server at the time of this purchase, may be accepted. A user provides with the use application form in which the information which specifies the service used with the address, a name, etc. in this case is written down, and the salesclerk of a dealer etc. supplies the household electric appliances ID of information, such as the address, the name, age, an occupation, the telephone number, an electronic mail, and liking, and the information which shows the service to be used which the user wrote down in the use application form, and the purchased device to DB engine 42b through a terminal unit etc. like ****.

[0040] The information supplied to DB engine 42b as mentioned above is supplied to customer DB43a through DB engine 42b, and information, such as the household electric appliances ID which show the household-electric-appliances device which the user purchased, matches it with the user name of the user concerned, and User Information, and it is recorded on the correspondence table in customer DB43a.

[0041] In addition, entry of each item of a use application form makes only the thing required for offer of service indispensable, and a necessarily unnecessary thing may be taken as a user's arbitration. Moreover, registration of information, such as a user's address and a name, and household electric appliances ID may be the time of applying for use of the service which an after [purchase] at-any-time [not the time of the purchase of a device but] or household-electric-appliances server offers etc. Although the operator of household-electric-appliances server equipment 40 etc. may be made to input this application into DB43 according to the application form mailed by the telephone or user from a user, a user operates the web browser currently performed with the terminal unit connected to networks 10 and 20 or a network 30, and may be made to input it via HTTPd42a.

[0042] In this customer DB43a, a part of User Information [at least], such as every user name, the same user name, and the address, manages the household electric appliances ID of the registered device etc. for every same user. He is trying for all conditions, such as a user name and the address, to manage the information about the household-electric-appliances device which the user concerned owns for every same user in this <u>drawing 2</u> .

[0043] By considering customer DB43a as such a configuration, a list of the household-electric-appliances device which the user concerned owns by using a user name or User Information as a search key can be searched now.

[0044] Moreover, it matches with the household electric appliances ID of each device, and the information which shows the classification (for example, exceptions, such as TV equipment, image transcription equipment, an air conditioner, and hot-water supply management equipment) of a household-electric-appliances device, the manufacturer/part number of a household-electric-appliances device, the date of manufacture, purchase hysteresis, maintenance record, etc. is recorded on this customer DB43a.

[0045] moreover, it is shown in above-mentioned <u>drawing 2</u> R> 2 at this customer DB43a -- as -- the access approach ("access": -- the information which shows exceptions, such as the approach of networks, such as the Internet, a telephone, or others, --) from a household-electric-appliances server to the household-electric-appliances device concerned [in <u>drawing 2</u>] The information which always shows exceptions, such as the approach of connection, the so-called dial up which sets up connection at the time of the need, or others, The addresses (information which shows the addresses, such as an IP address, the telephone number, and a proxy server, information which shows the access approach) of the household-electric-appliances device concerned match with the household electric appliances ID of each household-electric-appliances device the information

which shows whether address translation etc. may enter on the way, and it is recorded.

[0046] In addition, at the time of the purchase of a household-electric-appliances device, or the application of service, a part of information corresponding to household electric appliances ID can be a blank. For example, in case the IP address of a household-electric-appliances device connects the household-electric-appliances device concerned to a network, in order to set it up, it is thought at the time of purchase that the case of being unknown is common.

[0047] In this case, before offer of service is started, the information on access in above-mentioned drawing 2 , the address, etc. is registered. An IP address is assigned to this household-electric-appliances device in case the household-electric-appliances device which the user purchased is specifically connected to the network 20 grade in **. Then, through router equipment 29 grade, the household-electric-appliances device concerned supplies the information which shows the household electric appliances ID of a self-device, the assigned IP addresses (the IPv four address, the IPv6 address, DNS name, etc.), and the access approach to DB engine 42b, and requires registration of it. Each household-electric-appliances device has held the address of household-electric-appliances server equipment 40, the access approach to household-electric-appliances server equipment 40, etc. beforehand, and each household-electric-appliances device supplies household electric appliances ID, an IP address, etc. to household-electric-appliances server equipment 40 according to these.

[0048] Thus, if household electric appliances ID, an IP address, etc. are supplied, DB engine 42b of household-electric-appliances server equipment 40 will register the supplied household electric appliances ID, an IP address, etc. into customer DB43a.

[0049] In addition, although it is not limited to the configuration shown in this drawing 2 and has the same logical structure as this customer DB43a, physically, multiple files etc. distribute, customer DB43a is stored in them, and you may make it constitute it by matching these with a pointer.

[0050] Moreover, as shown in drawing 3 , for each household-electric-appliances device of every, an available function is matched with the information (classification, part number) for identifying the household-electric-appliances device here by household-electric-appliances DB43b, and is held at it. Moreover, the image which matches with household electric appliances ID or a product part number, and shows a general view of specifications, such as the information about a household-electric-appliances device, for example, a dimension, and power consumption, or the household-electric-appliances device concerned to this household-electric-appliances DB43b may be stored.

[0051] (Actuation)

(1) It is at supply of the program over a household-electric-appliances device, and the time, and the household-electric-appliances device of above-mentioned TV equipment 12 and air-conditioner 22 grade is constituted so that actuation can be managed according to a communication message with the exterior through communication link I/F121 or radio I/F221 etc. For this reason, household-electric-appliances server equipment 40 can be connected with these devices, and the operating state using the service offered from household-electric-appliances server equipment 40, then the service which the household-electric-appliances server equipments 40, such as remote operation, remote maintenance, or software distribution, offer, for example can be used now.

[0052] With this operation gestalt, since the TCP/IP protocol is mounted in the household-electric-appliances device connected to each networks 10 and 20, if it connects with a network 30 through the router equipments 19 and 29, a communication link can be performed with household-electric-appliances server equipment 40.

[0053] The control section of each household-electric-appliances device has held beforehand information (for example, "server.kaden.co.jp" etc.), such as URL (Unified Resource Locator) which shows the address of the household-electric-appliances server equipment 40 which offers service. Or IP addresses (for example, "Z" etc.) may be held as they are.

[0054] Or you may make it acquire the address of the household-electric-appliances server equipment 40 which offers service from the data which the receive section 123 grade of TV equipment 12 received, for example. It specifically matches with images, such as commercials of a household-electric-appliances device (for example, air conditioner 22) which offer service, and the address of the information for identifying the household-electric-appliances device concerned and the household-electric-appliances server equipment 40 which offers the service to the household-electric-appliances device concerned is supplied.

[0055] Or the address of household-electric-appliances server equipment 40 is acquired, and a user inputs the acquired address for example, through web browser 124 grade, and may be made to supply the household-electric-appliances device which receives offer of the service concerned for the inputted address separately.

[0056] Moreover, in order for a user to actually use the service which household-electric-appliances server equipment 40 offers, it is necessary to change into the condition that the program concerned which offers the program for performing processing for using the service concerned for a household-electric-appliances device, or is beforehand mounted in the household-electric-appliances device can be performed.

[0057] By the way, the demand of offer of service etc. to household-electric-appliances server equipment 40 is performed using the device of the terminal unit 50, the personal digital assistant equipment 70, or the TV equipment 12 grade which has the display function which displays the directions to the input function and user who input the directions from a user etc.

[0058] For example, in receiving offer of service of the remote operation to an air conditioner 22, a user operates TV equipment 12 and demands offer of service of the remote control concerned of household-electric-appliances server equipment 40.

[0059] As shown in drawing 4 , a user inputs information, such as the address with an above-mentioned user, and a name, etc. into the application form which the web browser 124 of TV equipment 12 displays on a display 125, and, specifically, the application of remote-control service of an air conditioner 22 is directed (S1). This application form may be beforehand stored in TV equipment 12 like the above-mentioned household electric appliances ID. Or only the URL of the form for which it applies is stored in TV equipment 12, and a web browser 124 applies from the URL concerned, and you may make it acquire form according to the directions from a user.

[0060] If a user inputs the information for identifying the service (in this case, remote control of an air conditioner 22) which requires the information about users, such as the address, a name, etc. which were inputted into application form, household electric appliances ID (in this case, "A" which is the household electric appliances ID of TV equipment 12), and offer etc., a web browser 124 will generate an application message including such information, will encipher this, and will transmit to household-electric-appliances server equipment 40. Specifically, this application message is enciphered and transmitted by procedures, such as SSL (Secure Sockets Layer). The transmitted application message is supplied to household-electric-appliances server equipment 40 through communication link I/F121, router equipment 19, and a network 30 (S2). In addition, the household electric appliances ID of TV equipment 12 may have composition which is automatically passed to household-electric-appliances server equipment 40, even if a user does not input.

[0061] The supplied application message is supplied to DB engine 42b through communication link I/F41 and HTTPd42a. The classification, the part number, etc. of the information (user name) of the user corresponding to [apply, extract the household electric appliances ID in a message, and / with reference to customer DB43a] the household electric appliances ID concerned in DB engine 42b to whom DB engine 42b was supplied, and a household-electric-appliances device are acquired (S3). Furthermore, DB engine 42b acquires the information on the image of the household-electric-appliances device concerned etc. from household-electric-appliances DB43b, and supplies it to HTTPd42a. HTTPd42a generates the data of the data (for example, HTML (Hyper Text Markup Language) format or XML(eXtensible) Markup Language) format on which the check screen to the application of offer of service including the definition of the carbon button which inputs display directions of the supplied image data and the check directions from a user etc. is displayed. The generated data are supplied to TV equipment 12 through communication link I/F41 (S4).

[0062] In the data of such a check screen, DB engine 42b may define the display of the purchase hysteresis acquired from customer DB43a, maintenance hysteresis, etc., for example.

[0063] By the way, before creating the data of such a check screen, a function with the available household-electric-appliances device corresponding to the classification and the part number of the household-electric-appliances device which DB engine 42b acquired in above-mentioned S3 with reference to the correspondence table stored in household-electric-appliances DB43b is checked, and you may make it judge whether it is actually available in the service which the user is demanding. In this case, if HTTPd42a has the available service which the user demanded, it will perform processing of S4, but when not available, generates the data in which the purport which is not available is shown separately, and transmits to TV equipment 12.

[0064] By performing such processing, a user can recognize the use propriety of service, can perform demand processing of offer of service again, and can contribute to improvement in operability.

[0065] If the data of the above check screens are supplied, a web browser 124 will display the screen according to the data concerned on a display 125, and will require a check of a user (S5).

[0066] If the user who looked at such a check screen operates the input section 122 and inputs check directions, a web browser 124 will generate the message of an Acknowledgement and will transmit to household-electric-appliances server equipment 40 (S6).

[0067] If such an Acknowledgement is supplied, HTTPd42a transmits a predetermined command to an air conditioner 22, after processing authentication of an air conditioner 22, exchange of a key, etc. by SSL (S7), and after making an air conditioner 22 into the condition of receiving a program, the program which receives remote control will be supplied (S8).

[0068] This program will be supplied to a control section 225 through router equipment 29 and radio I/F221, will be stored in the memory with which a control section 225 is equipped, and will be in a running state (S9).

[0069] It is in this condition, for example, if the command of remote control is supplied to air-conditioner 22 from household-electric-appliances server equipment 40, an air conditioner 22 will be in the condition that actuation can be controlled according to the command concerned.

[0070] If offer of a program is successful, DB engine 42b will change from "no" the information in customer DB43a corresponding to the household-electric-appliances device which offered the program (remote-control propriety) into "it is good."

[0071] By the way, in this household-electric-appliances control system, direct communication can be carried out now with the relation of end to end (End to End) using the same protocol (for example, TCP/IP) between the air conditioners 22 which receive offer of the TV equipment 12 which requires offer of household-electric-appliances server equipment 40 and service, or service. For this reason, the program which applied through router equipment 19 as mentioned above, supplied the message to household-electric-appliances server equipment 40, and was supplied according to this can be supplied to the air conditioner 22 which receives offer of service as it is through router equipment 29.

[0072] Moreover, in this household-electric-appliances control system, the household electric appliances ID of a proper were held to each household-electric-appliances device, and the household electric appliances ID of the household-electric-appliances device which each user owns are managed. For this reason, in the household-electric-appliances server equipment 40 side, the user corresponding to household electric appliances ID can be specified only by providing the demand of offer of service with household electric appliances ID.

[0073] Moreover, by holding the classification and the part number of the household-electric-appliances device corresponding to household electric appliances ID, and the available function, the available function corresponding to household electric appliances ID can be specified, and it can check at the time of the application of offer of service.

[0074] In addition, although above-mentioned explanation showed the case where a user demanded offer of remote-control service of an air conditioner 22 of household-electric-appliances server equipment 40 using TV equipment 12 As long as it has the display which performs the display to the input section and the user who input the directions from a user, it may be made to require service of household-electric-appliances server equipment 40, for example using other terminal unit or other household-electric-appliances devices of a terminal unit 50 and personal digital assistant equipment 70 grade.

[0075] In above-mentioned explanation, moreover, in an application message The household electric appliances ID of a household-electric-appliances device ("A" which is the household electric appliances ID of TV equipment 12 in an above-mentioned example) which transmit the application message concerned are transmitted. The list of household electric appliances ID of the household-electric-appliances device which the user of the household-electric-appliances device by which household-electric-appliances server equipment 40 transmitted the application message concerned with reference to customer DB43a owns is acquired. Data (for example, data of a HTML format or an XML format) including description of the processing for performing displays corresponding to these household electric appliances ID and these selections are created. A web browser 124 is supplied through HTTPd42a, and you may make it choose household electric appliances ID according to the directions which the

user inputted according to this. Moreover, you may make it specify the household electric appliances ID of the household-electric-appliances device which receives offer of service in an above-mentioned application message.

[0076] Moreover, although above-mentioned explanation showed the case where the service whose user receives offer was specified in an above-mentioned application message In the household-electric-appliances device corresponding to the household electric appliances ID to which DB engine 42b was supplied from the TV equipment 12 grade an available function It acquires from the correspondence table currently held at household-electric-appliances DB43b, data including description of the processing which performs displays and these selections of an available function are generated, and it applies for the function directed by the user according to this, and may be made to consider as the target service. Or you may make it check to a user whether it is good with the service which DB engine 42b guessed and guessed that service for an application was according to the function acquired from household-electric-appliances DB43b.

[0077] (2) Use of service (remote control)
As mentioned above, if the program for receiving the remote-control service from household-electric-appliances server equipment 40 will be in a running state, an air conditioner 22 will be in the condition of supervising the input of household-electric-appliances server equipment 40 to a directive command other than the directions input from the input section 222.

[0078] Although a user can use remote-control service even if he uses any of a terminal unit 50 or personal digital assistant equipment 70, he explains the case where personal digital assistant equipment 70 is used, by the following explanation.

[0079] If a user directs use of remote-control service, personal digital assistant equipment 70 will perform log in processing to household-electric-appliances server equipment 40 (S11). In this log in processing, personal digital assistant equipment 70 transmits authentication information to household-electric-appliances server equipment 40. If it checks that authentication information is just, household-electric-appliances server equipment 40 will exchange the key for the encryption communication link by SSL etc. between personal digital assistant equipment 70. moreover, him, such as an input of the user ID and the password which were beforehand assigned to the user if needed, -- authentication for a check may be performed.

[0080] After exchange of a key is completed, the web browser 74 of personal digital assistant equipment 70 requires transmission of the data (household-electric-appliances control page) for directing remote control of an air conditioner 22 from HTTPd42a (S12).

[0081] HTTPd42a supplies the data with which the selection input of the input column or command which inputs a command etc. was defined to a web browser 74 as data of a household-electric-appliances control page to such a demand (S13).

[0082] If such data are supplied, a web browser 74 will display the image according to the data concerned on a display 73. The display to which the input of the temperature set up, for example is urged in this image is included. If a user requires that the key of "2" and "5" prepared in the input section 72 should be pressed, and laying temperature should be made into 25 degrees C from this image (S14) The message of the purport which makes laying temperature of an air conditioner 22 25 degrees C is generated by the web browser 74, and transmits the message (temperature setting demand) concerned to household-electric-appliances server equipment 40 (S15).

[0083] If such a temperature setting demand is received, DB engine 42b will acquire the information on the access approach (access in <u>drawing 2</u> R> 2) from the correspondence table in customer DB43a to the air conditioner 22 of the user concerned, the address, etc. The service provision section 42 performs authentication processing and the message exchange of a key between air conditioners 22 by the acquired access approach (S16).

[0084] If these processings are successful, the service provision section 42 will encipher the temperature setting demand from the above-mentioned web browser 74, will attach a digital signature, and will supply it to an air conditioner 22 (S17).

[0085] The signature of the supplied temperature setting demand checks a control section 225, if just, a temperature setting demand will be decrypted (S18), and it will interpret and execute the decrypted command (S19).

[0086] Furthermore, when such remote control is successful, a control section 225 generates the information which shows that, it transmits to household-electric-appliances server equipment 40 (S20), household-electric-

appliances server equipment 40 transmits this to personal digital assistant equipment 70 (S21), and you may make it notify the purport that remote control was successful with the display 73 (S22).

[Translation done.]

DRAWINGS

[Drawing 2]

43a

ユーザ名	ユーザ情報	所有家電の家電ID	種別・型番	製造年月日	購入履歴	メンテナンス記録	アクセス	アドレス又はネーム	遠隔制御可否
X	住所、氏名、年齢、職業、電話番号、プロバイダ、電子メールアドレス、好み、	A	TV装置 XYZ-012	・・・	・・・	・・・	IPv6	X	否
		B	空調装置 ABC-123	・・・	・・・	・・・	IPv6	Y	可
		C	ルータ装置 DEF-123	・・・	・・・	・・・	IPv6	V	否
		D	ルータ装置 DEF-456	・・・	・・・	・・・	IPv6	W	否
		・・・	・・・	・・・	・・・	・・・	・・・	・・・	・・・
Y	住所、氏名、年齢、	YA	TV装置 XYZ-013	・・・	・・・	・・・	IPv4	YA	可
		YB	：	：	：	：	：	：	：

[Drawing 1]
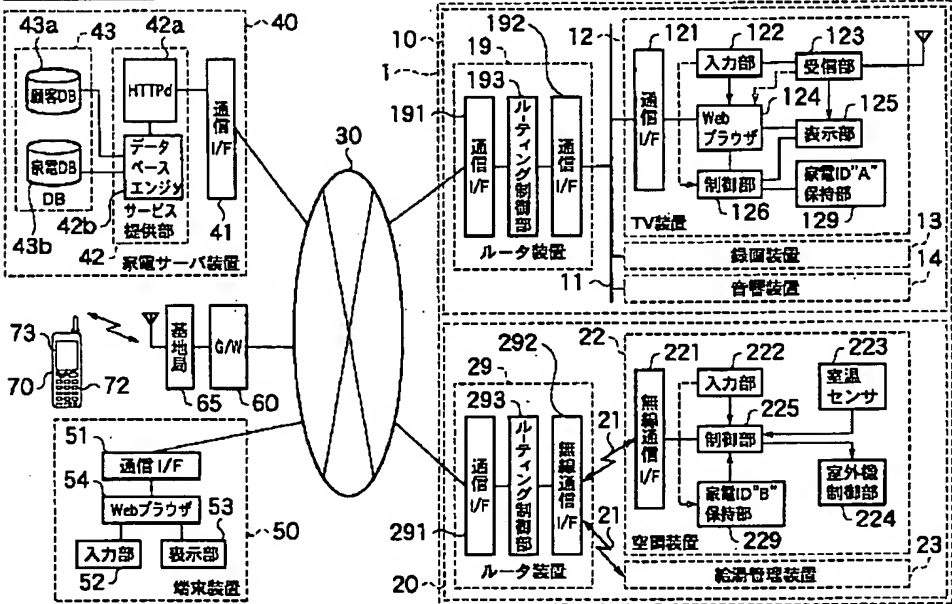
[Drawing 3]

43b

(遠隔制御)

種別	型番	機能A	機能B	機能C	・
TV装置	XYZ-001	○	×	×	・
	XYZ-002	○	○	×	・
	XYZ-003	○	○	○	・
	・	・	・	・	・
空調装置	ABC-123	○	×	×	・・
	ABC-124	○	○	×	・
	・	・	・	・	・

[Drawing 4]

家庭サーバ装置 40　　ルータ装置 19　　TV装置 12　　ルータ装置 29　　空調装置 22

S2 空調装置遠隔制御
サービス申込みフォーム、
家電ID(暗号化して
送信される、以下
同様)

ユーザが空調装置遠隔
制御サービスを申込み　S1

TV装置の家電IDより、
対応するユーザ(X氏)
を抽出。該ユーザの空調
装置を抽出　S3

S4 確認要求(空調装置の
写真、「この空調装置
でよいですか?」)

表示部に空調装置の
写真表示。ユーザに
確認を促す　S5

S6 確認応答

S7 認証・鍵交換

S8 空調装置遠隔制御プログラムダウンロード

S9　空調装置遠隔制御
プログラムインストール
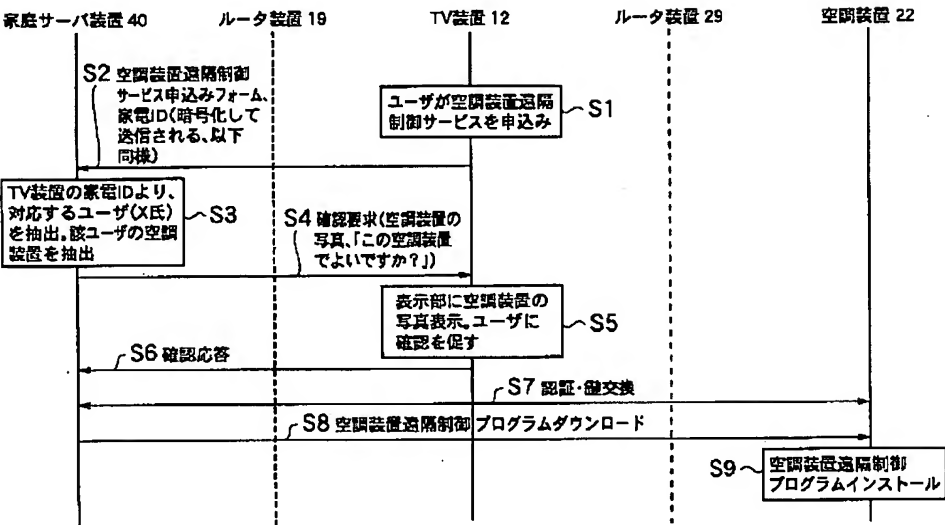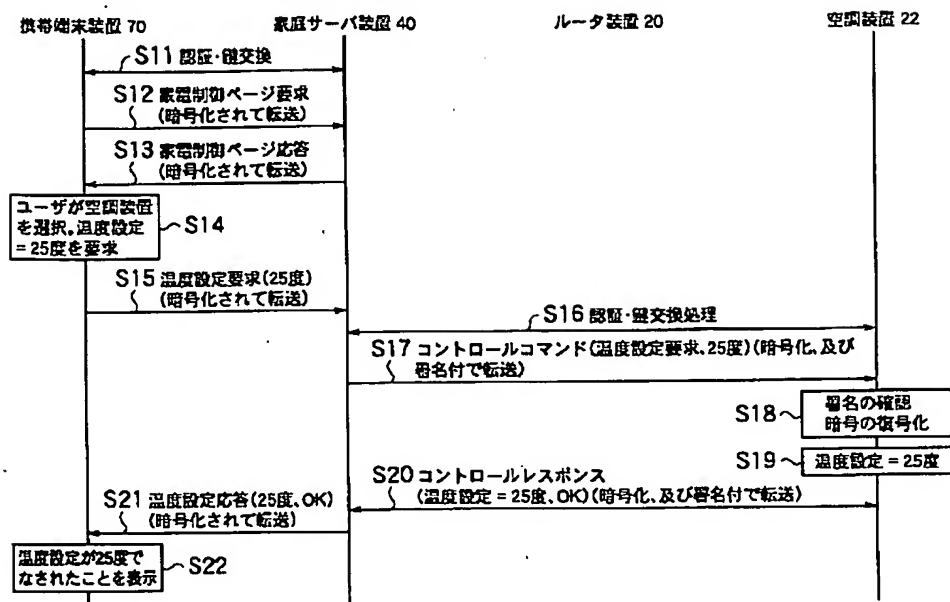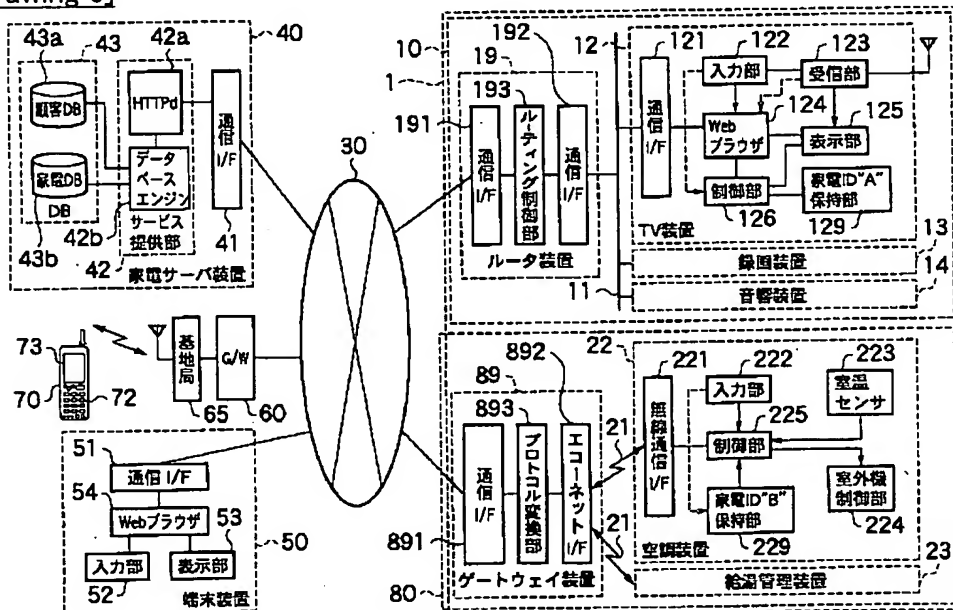
[Drawing 8]

ヘッダ
(あて先IPアドレス=Z、ソースIPアドレス=W、ポート番号=HTTP用)

ペイロード
　POST/cgi-bin/kaden. cgi HTTP/1.1

　Data = 転送パラメータ(暗号化されている) : 家電 ID = B、ポーリング要求

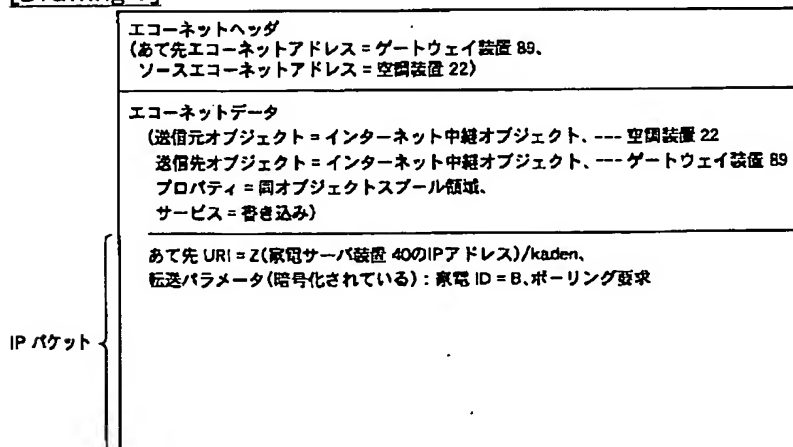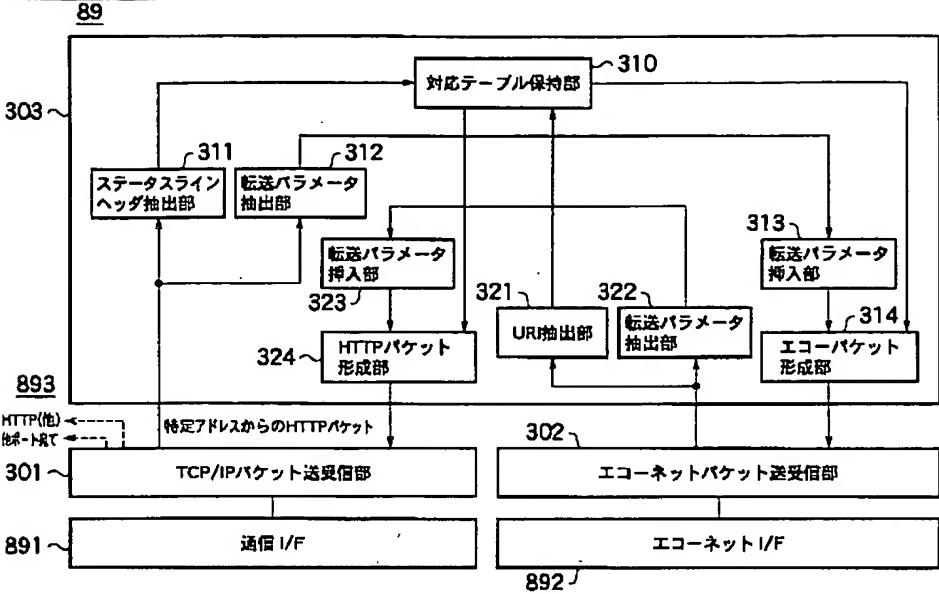[Drawing 5]

携帯端末装置 70   家庭サーバ装置 40   ルータ装置 20   空調装置 22

S11 認証・鍵交換

S12 家電制御ページ要求
（暗号化されて転送）

S13 家電制御ページ応答
（暗号化されて転送）

ユーザが空調装置
を選択、温度設定
＝25度を要求 — S14

S15 温度設定要求(25度)
（暗号化されて転送）

S16 認証・鍵交換処理

S17 コントロールコマンド（温度設定要求、25度）（暗号化、及び
署名付で転送）

S18〜 署名の確認
暗号の復号化

S19〜 温度設定＝25度

S20 コントロールレスポンス
（温度設定＝25度、OK）（暗号化、及び署名付で転送）

S21 温度設定応答(25度、OK)
（暗号化されて転送）

温度設定が25度で
なされたことを表示 — S22

[Drawing 6]

[Drawing 7]

エコーネットヘッダ
（あて先エコーネットアドレス＝ゲートウェイ装置 89、
　ソースエコーネットアドレス＝空調装置 22）

エコーネットデータ
（送信元オブジェクト＝インターネット中継オブジェクト、 --- 空調装置 22
　送信先オブジェクト＝インターネット中継オブジェクト、 --- ゲートウェイ装置 89
　プロパティ＝同オブジェクトスプール領域、
　サービス＝書き込み）

あて先 URI＝Z(家電サーバ装置 40のIPアドレス)/kaden、
転送パラメータ（暗号化されている）：家電 ID＝B、ポーリング要求

IP パケット

[Drawing 9]
89

303～

| 310 対応テーブル保持部 |

311 ステータスライン ヘッダ抽出部　　312 転送パラメータ 抽出部

313 転送パラメータ 挿入部

転送パラメータ 挿入部
323

321 UR抽出部　　322 転送パラメータ 抽出部

314 エコーパケット 形成部

324～ HTTPパケット 形成部

893

HTTP(他) ←----
他ポートRT ←----

特定アドレスからのHTTPパケット

302～

301～ | TCP/IPパケット送受信部 | | エコーネットパケット送受信部 |

891～ | 通信 I/F | | エコーネット I/F |

892

[Drawing 11]
43a

ユーザ名	ユーザ情報	所有家電 の家電ID	種別・型番	アクセス	アドレス	ホームゲートウェイ へのアクセス	アドレス 又はネーム
X	住所、 氏名、 年齢、 職業、 電話番号、 プロバイダ、 電子メール アドレス、 好み、	A	TV装置 XYZ-012	IPv6	X	IPv6	V
		B	空調装置 ABC-789	機器からの ポーリング （30秒毎）	エコーネット アドレス （アドレス未定） →E1	IPv6	W
		C	ルータ装置 DEF-123	IPv6	V	—	—
		D	ホームゲートウェイ DEF-456	IPv6	W	—	—
		...	...	...	...	...	...

[Drawing 10]

310

あて先 URI	エコーネットアドレス
Z/kaden	E1（空調装置 22のエコーネットアドレス）
・・・	・・・

[Drawing 12]

家庭サーバ装置 40　　ルータ装置 10　　TV装置 12　　ゲートウェイ装置 89　　空調装置 22

S31 ユーザが空調装置遠隔制御サービスを申込み

S32 空調装置遠隔制御サービス申込み（フォーム、家電ID（暗号化して送信される、以下同様）

S33 TV装置の家電IDより、対応するユーザ（X氏）を特定、X氏のユーザの空調装置を特定

S34 確認要求（空調装置の写真、「この空調装置でよいですか？」）

S35 TV装置画面に空調装置の写真表示、ユーザに確認を促す

S36 確認応答

S37 電源投入指示（空調装置の写真、「この空調装置の電源投入」）

S38 TV装置画面に空調装置の写真表示、ユーザに電源ONを指示

S39 ユーザが空調装置電源ONし、必要ならネットワーク接続を設定

S40 空調装置電源ON

S41 エコーネット初期化

S42 属性通知要求

S43 属性通知（ネットワーク中継機能）

S44 中継要求（URI、パラメータ：家電ID=B、ポーリング要求）

S45 HTTP POSTメソッド（X-ECHO：家電ID=B、ポーリング要求（暗号化））

S46 認証・鍵交換

S47 プロトコル変換、中継

S48

S49 空調装置遠隔制御プログラムダウンロード

S50 プロトコル変換、中継

S51 空調装置遠隔制御プログラムインストール

[Drawing 15]

```
ヘッダ
(あて先IPアドレス＝Z、ソースIPアドレス＝Y、ポート番号＝HTTP用)

ペイロード
   POST/cgi-bin/kaden. cgi HTTP/1.1

   Data＝転送パラメータ(暗号化されている)：家電ID＝B、ポーリング要求
```

[Drawing 13]
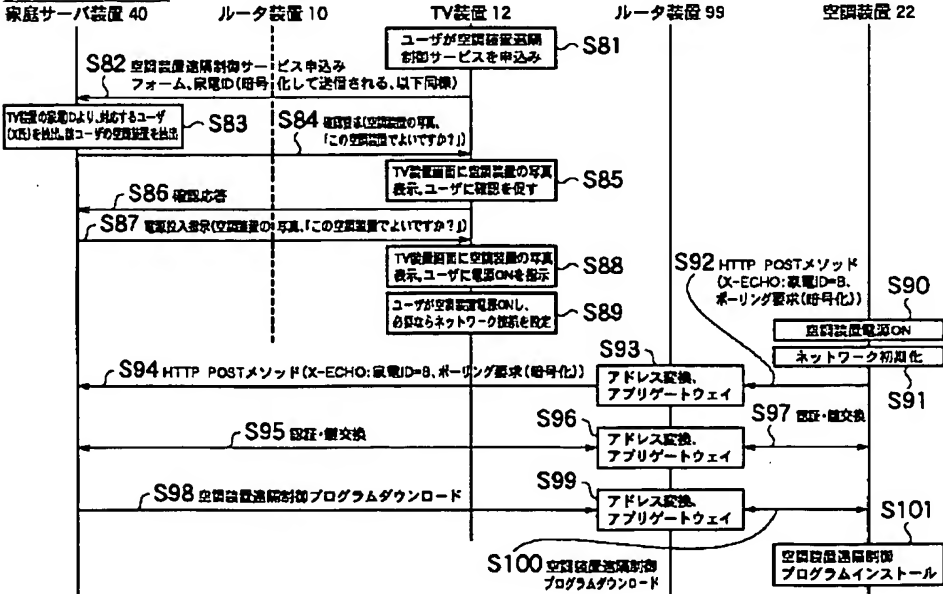
携帯端末装置 70　　　　家庭サーバ装置 40　　　　ゲートウェイ装置 89　　　　空調装置 22

S60 認証・鍵交換

S61 家電制御ページ要求
(暗号化されて転送)

S62 家電制御ページ応答
(暗号化されて転送)

ユーザが空調装置
を選択。温度設定
＝25度を要求 — S63

S64 温度設定要求(25度)
(暗号化されて転送)

S67 HTTP POSTメソッド
(X-ECHO:家電ID=B、
ポーリング要求(暗号化))

S65 インターネット中継要求
(URI、パラメータ:家電
ID=B、ポーリング要求)

プロトコル変換、
中継
S66

S68 HTTPレスポンス(家電
ID=B、温度設定要求、25度、
(暗号化))

S70 インターネット中継応答
(URI、パラメータ:家電
ID=B、ポーリング要求)

プロトコル変換、
中継
S69

S71 ～ 空調装置遠隔制御
(温度設定)
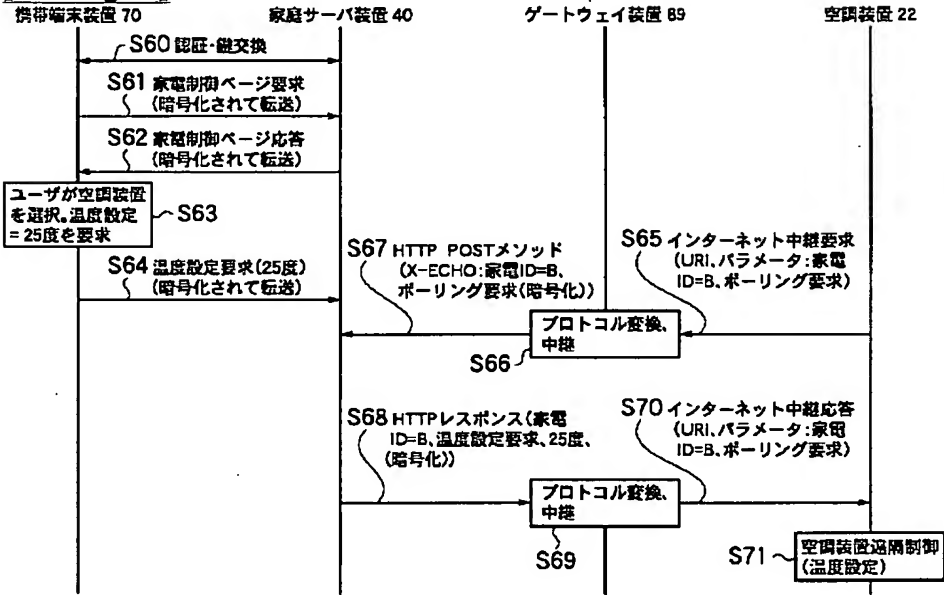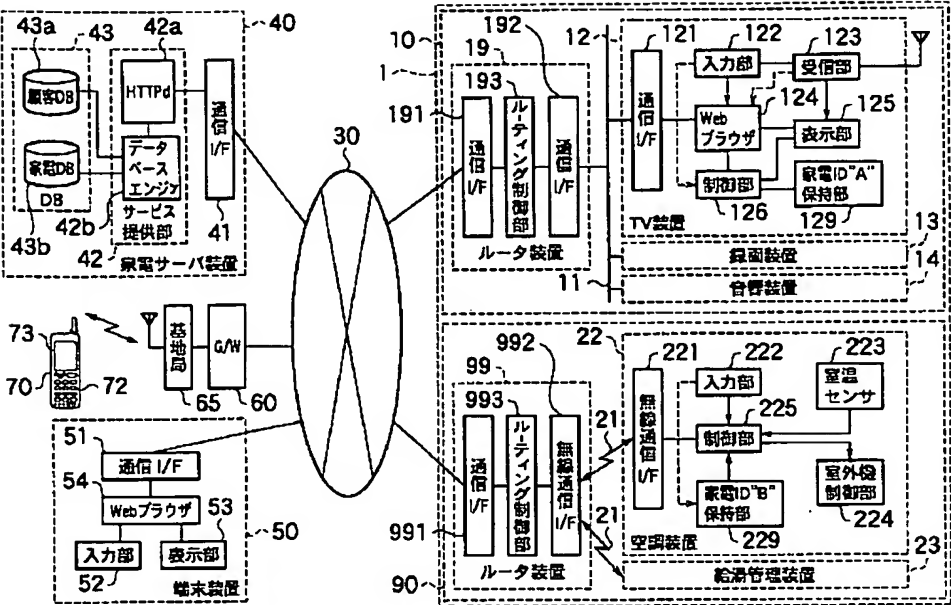
[Drawing 14]

[Drawing 16]

43a

ユーザ名	ユーザ情報	所有家電の家電ID	種別・型番	アクセス	アドレス	ルータ装置へのアクセス	アドレス又はネーム
X	住所、氏名、年齢、職業、電話番号、プロバイダ、電子メールアドレス、好み、	A	TV装置 XYZ-012	IPv6	X	IPv6	V
		B	空調装置 ABC-789	機器からのポーリング（30秒毎）	到達不可能	IPv6	W
		C	ルータ装置 DEF-123	IPv6	V	―	～
		D	ホームゲートウェイ DEF-456	IPv6	W	―	―
		...	...	...	...	...	...

[Drawing 17]

[Drawing 18]

[Translation done.]